The Dental Digest.

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Original Contributions.

DIAGNOSTIC ERRORS.

By W. Geo. Beers, L.D.S., D.D.S., Montreal, Can. Read Before Vermont State Dental Society, March 18, 1898.

Diagnosis is the process of discovering a disease and its distinction from other diseases by its characteristic signs and symptoms. Not only to know inflammation of the pulp from hyperesthesia of the dentin, but scientifically to explore and explain the reasons for our conclusion. Repeated familiarity with the same disease may enable a dentist, as well as a physician, to make a direct and accurate diagnosis. In other cases where the origin of the trouble is obscure and a disease has subjective symptoms resembling other diseases, the diagnosis has to be more or less differential. Simple gum-boil, in some of its signs and symptoms, resembles alveolar abscess. We observe the symptomatology essential to the one and not to the other, and summarizing them we form our conclusions. The pathognomonic signs, those which specially characterize a disease, are the chief guides in differential diagnosis.

From the point of view of scientific fairness, it is no exaggeration to declare that the wisest dentist is not the one who never makes mistakes, but he who rarely makes the same mistakes the second time. Error and failure are necessary stimuli to fact and truth. The men who say they never err are men who perhaps do not know that they do not tell the truth. There are occasions when we find ourselves overlooking and perhaps interloping upon territory not our own; yet we should be ashamed of our ignorance if we do not possess sufficient knowledge to discriminate between the simple and the complicated, between that which demands our attention and the signs and symptoms which rebuke our meddling. Diagnosis may be as simple, as direct, yet entirely devoid of the least pretense to the scientific. Anyone can distinguish a case of severe odontalgia of an exposed pulp from a case of pericementitis without understand-

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Literature Upon Application.

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ing the scientific procedure by which the conclusion is arrived at. I think that as a science in dentistry the art of diagnosis is overshadowed by the fascinations of its practice. I doubt if as a profession we systematically adopt that precise and methodical examination, direct and differential, of obscure cases which is exacted in medical diagnosis. This is due to our circumscribed methods of education as well as of practice. As a rule, the diseases of the teeth are not alarming enough to prognosticate death or even dangerous illness, and when they involve serious complications they pass out of our observation and care. Since medical men have surrendered the care of the teeth, neither dentists nor physicians know so much about their pathology in a scientific way as they would were all dentists medical men, and all medical men dentists. The latter lack the discipline and development of a medical and surgical curriculum, and what they learn of either is but a disjointed smattering; the former treat the teeth with even more contempt than they treat corns—that is, the teeth in health or after general illness may go to the dentist or the devil, for all they care.

The disabilities under which the dentist labors in diagnosis are apparent. Quite as much so if the educational methods and environment of the oculist had confined him as narrowly to the eyes as those of the dentist have confined him to the teeth. When we know that most of the diseased conditions of the teeth are but signs of disease elsewhere; that they represent the same departures from normal physiological action as diseased conditions in other parts; that the boundaries of our pathology extend to the entire head and neck, the stomach, etc., we should recognize the important fact that, while practically our art has its limitations, dental diagnosis has none. The mouth has no more fixed and unalterable standard of health than the lungs or the liver. There are the same variations and adjustments to varying circumstances in the oral cavity as in the bladder or bowels. A diseased pulp is as simply healthy structure disturbed in its normal functions as the surgeon finds in a sprain or an aneurism. There is no more an isolated and distinct dental pathology than there is an independent ocular or aural pathology. The same natural forces move and the same physiological laws govern the processes of disease in the teeth as in the heart or lungs. How then can we expect the problems of our pathology to be solved except by deputy? The limitations of den-

tal education may make eminently successful practical men; but as we cannot know any fact scientifically by mere intuition, it is difficult to surmise how we can pretend either to accuracy in diagnosis.

Why do we err in diagnosis? Because we do not *know*. Do not know what? Do not know the scientific basis and detail of diagnosis; do not know what we see, smell, hear, taste, touch. Our very senses are apt to be deceived, and nothing is truer than that we cannot accept as infallible what we call the evidence of our senses. We cannot always believe what we see with the naked eye nor yet with the microscope. Those who are familiar with the exploded inflammatory theory of caries can recall the microscopical errors even of Heitzman and Abbott. I remember the late Dr. I. H. McQuillen referring to this fact in looking at a large microphotograph, one of a diatome, the pleura-sigma angulatum. When held within focal distance of the eye the sigma or spaces appeared hexagonal, but if carried beyond that they assumed a circular form, giving a good illustration of the fact that we cannot always believe what we see. The results of various microscopical adjustment and the revelations made by the use of increased power are familiar to us all. Indeed we are met in our investigations by numberless obstacles in the establishment of fact, and are often tempted to hasty generalization and preconceived conclusions. Illustrations of this are older than the amalgam controversy of 1845, when it was stated, even by chemists, that the sulphuret of silver on the surface was a sulphuret of mercury. Jumping to conclusions based upon imperfect observation of phenomena has been one of the common mental gymnastics of the profession, and our memories as well as our laboratories are lumbered with the "cock-sure" infallibilities of ingenious inventors. Fact does not leap into existence out of mere fancy, as Minerva bounded at once out of the head of Jupiter. The history of errors in the dental creeds, every one of which had its dogmatic defenders, would make an interesting addition to the literature of dentistry. We have had many fads presented to us in our lifetime, and it should make us modest in our assertions to reflect that for every established fact we have the history of a hundred demolished fables. Simon Pure has so often turned out to be a Will-o'-the-Wisp in disguise that experience makes one cautious of accepting as gold all that glitters, and yet truth has often risen out of error. As Bacon says, "*Ex errore citius emergit veritas quam*

ex confusione." We need not therefore be deterred by our errors. If we were we should never discover a single fact, for there was never a single fact that was not born of a score of errors.

Now to form a correct diagnosis we must at least know the physiological character of the structure we treat. Yet that is not enough. It is like knowing only half the alphabet, or like knowing by heart the impersonal Latin verbs, while ignorant of the first declension. In that way we are only "fractionally qualified" diagnosticians. To know caries from erosion, gingivitis from the oral effects of mercury, to distinguish pulpitis from pericementitis—that is not all of dental pathology.

The applications of etiology are as necessary in simple odontalgia as in complicated fever, if our diagnosis is to be better than a guess. Proper treatment can only follow knowledge of the true cause of disease. A case of odontalgia is presented. Sound teeth by the ton have been extracted because the operators, chiefly the physicians who meddle in dentistry, did not know how to search for the origin of the pain. There are as many causes of odontalgia as there are methods of treatment. What sort of odontalgia is it? Or is it odontalgia, or reflected neuralgia, or any one of a dozen other causes of toothache? It may be neuralgia. If so, is it trigeminal or trifacial? And further, is it caused by dental irritation, or is it of distant, perhaps of abdominal origin? If odontalgia, is it local, and if so, is it due to simple exposure of hypersensitive dentin or to an exposed pulp, or to morbid conditions of the pulp without exposure, or to pulp stones, or to a dead pulp and alveolar complications? Is it referred odontalgia, and if so, is it peripheral, central or cerebral, systemic or general? Is it the odontalgia of gout, of rheumatism, or pregnancy: the causes of each differ. The patient complains of pain in the lower bicuspid; it is reflected along the mandible to the ear. It may be that the pain originates in a lower molar. We cannot trust the opinion of the patient. This is, no doubt, very elementary to this audience, but I use the simplest illustrations to point out the frequent need for more than merely local dental knowledge.

Why do the physicians who extract teeth so commonly err in their diagnosis? For the same reason that we err. Their knowledge of diagnosis is too commonly merely medical; ours is too commonly merely dental. It is important in all our practice to

inquire how a particular disease developed. When, for instance, we find rapid and extensive caries in the teeth of an otherwise healthy patient, our duty is only half done by operating, or even by hygienic instruction. Exceptional effects have exceptional causes. The permanency of operations may depend as much upon correct knowledge of the cause as upon skillful work. The causes are not always confined to the mouth, and our oral hygiene may be largely useless to prevent recurrence of disease. Directly we know the true cause we can proceed with some scientific accuracy.

I have long been convinced that one of the most valuable specialisms in dentistry would be that of the exclusive consultant, who should devote his entire time to diagnosis and critical examination of all the possible influences which may act injuriously upon the dental structures. Our failures in diagnosis are frequently due to lack of time, especially in constituencies where consultations are "included in the bill of fare." There may be temporary or constitutional disturbances necessary for consideration; such as anemia, chronic diseases of the nervous system, of the liver, the kidneys, pregnancy, or menstruation. We may err by attempting to blame the teeth when, as a cause, they are entirely innocent. We may attribute to carious teeth morbid conditions which have been merely coincident and not consequences. Scrofulous caries of the molar bone near the suture with the superior maxilla may be attributed to diseased teeth, when they are in no way connected with the disease. A submaxillary lymph gland, adherent to the bone, in an early stage of suppuration may be mistaken for an outer pointing alveolar abscess. On the other hand, a developing tumor of the maxilla may be mistaken for an abscess; a lymphatic gland in the lower jaw, due entirely to strenuous conditions, may be mistaken for an abscess. Only recently I met a case of a discharge from the submaxillary gland extending to the clavicle, which had been surgically treated off and on for two years, due to the death of a pulp after the rough treatment of crowning a lower third molar. Many such cases no doubt occur to you all. There are so many motes in our own eyes that I refrain from referring specially to the many errors in diagnosis made by physicians in relation to the jaws. When we contemplate the immensity of our own ignorance, which long experience and careful investigation seem to intensify, we need be charitable to the mistakes made by medical men in matters encroaching upon our

specialty. Various affections of the salivary glands of the jaws, the antrum, gums, ear and eye, throat, nose, etc., originate in diseased conditions of the teeth, and are properly treated only by their primary or coincident attention. Simple abscesses are every day confounded with serious tumors; mumps with alveolar abscess, and *vice versa*. In dentistry we are infested with a class who escape diagnostic difficulties by the "practical" use of the forceps. They are nothing but quacks and tinkers, and were public opinion as sufficiently enlightened in the value of the teeth as in that of the eyes, they would be treated as criminals.

RETIRING PRESIDENT'S ADDRESS.

By Dr. C. S. Campbell, St. Albans, Vt. Read before Vermont State Dental Society, March 16, 1898.

It would not be my purpose to make a lengthy or scientific address at this time, even if I were able to do so, but I should like to say a few words to you on the value of our conventions. To attain success and approximate toward perfection in any enterprise or undertaking, it is almost indispensable that there should be systematic, concentrated and united effort. It is as true to-day as ever it was and will apply as well to our dental interests as it will to our political relations one to another.

Let us notice briefly the workings of the political convention. Political parties assemble in convention, define their position and declare their intentions as to great principles and interests affecting or likely to affect the weal or woe of their countrymen. Committees are appointed to draft "resolutions," which are accepted by the body appointing the committee, made public through the press, approved and indorsed by subconventions clear down to the primaries, and at last the report of a committee of not more than half a dozen men becomes the accepted issue that is to agitate, excite and convulse a whole nation. The same sentiment expressed in the precise language and by the very men constituting the committee, without the indorsement of a convention or association, would often be powerless even to agitate or excite.

It is the conventional prestige or power, not the individual expression, that gives the sentiment force and efficiency. Paul, the most learned and eloquent of all the Apostles, knew full well the strength of association. Hence the exhortation, "Forget not the assembling

of yourselves together." The makers of the early history of our country well understood this fact, as witness the number of conventions which were held by the colonists before the Declaration of Independence was finally promulgated, and our land became what it is to-day, a model of republican government.

John Brown waged war upon the institution of slavery, and so zealous was he in his work and fixed in his convictions that he sealed his devotion to the cause with the sacrifice of his life. Yet the institution survived, and men continued to be bought and sold as articles of merchandise until, in convention assembled, it was "Resolved that to hold chattels in humanity was a stain upon our nationality and a libel upon our independence." The convention willed it, and the fetters fell from four million slaves.

This is an age of association, and it is this associated effect that has fostered scientific investigation, raised the standard of morality and of education, and stimulated our national literature. We have the Medical Association, where our learned doctors assemble and endeavor to solve the problem of how much medicine a man can take and still live. We have the Bar Association, a highly-educated body of men, who have burned the midnight oil in pursuing Blackstone, searching authorities, and preparing briefs, but whose ingenuity and skill is most apparent in bills of fees—always without a brief. Teachers' associations, *where* the *why* and *wherefore* is made entirely plain to the speaker, if not quite so to the audience; and so on, there are associations without number all along down the line, from that representing the highest art, to the Newsboys' and Street Cleaners' associations.

That there is great good accomplished by this associated work is manifest to all. Now, how are we, as a dental association, to get the greatest amount of good from our meetings? Our most earnest and progressive workers are found in our societies, and yet it is a matter of regret that there are still those outside, who, if once interested, would make very active and valuable members. Let us make it a personal matter to see at least that all such receive a cordial invitation to join us.

As our profession grows older and the need of better legislation for its protection becomes apparent, let us see to it that our appeals for such legislation are made in the name of our society, and if necessary signed by each of its members. We shall then find that

it is not a difficult matter to obtain such laws as are needed for the protection of the public and the profession.

I was impressed by some suggestions made by Dr. Beadles, of the Virginia State Dental Society. His idea is not to have *many* clinics but *good* ones by a few operators of known ability and experience. To have only one clinic in progress at one time, and that with the society in session and the officers in their places. For this a raised platform should be provided near the president's seat for an operating chair. With a free use of the blackboard and the patient in the chair the operator would have no difficulty in making clear to all what he intended to do. Being no longer students, such an explanation or illustration is often all that is needed to make all those present able to go home and perform the operation. By this method the operator would have the attention of the entire association and be stimulated to do his best, and each one of the audience have an equal chance of seeing his work. Dr. Beadles thought our best men would then be more willing to accept invitations to give clinics. Many of our members attended the meetings for this alone, and we know how unsatisfactory clinics are under the present method both to the operator and to the observer, and it seems to me the plan is worthy of a trial. Of course, if this plan should be adopted, it would at once be manifest that more time should be allotted to the meetings, and this is a matter upon which some of us have spent considerable thought.

We really have not one whole day for effective work, the first evening and the second morning being almost entirely devoted to the routine business of the convention, and our custom has devoted the other evening to social enjoyment in our annual banquet. I know that many of us feel that we cannot be away from our offices much longer, but do you think we or our practice would lose anything thereby? Are we not most of us narrowing our lives down to the limits of our own office too much? Is it not true that few of us take the vacation we ought to for our own good; that we, in common with business men and men of other professions, are leaving most of our social duties to the women of our households, thus forcing upon them, in addition to the thousand and one petty cares which naturally fall to the home-makers of our land, some burdens which justly belong to us? Too much of the social and reformatory work of the day is left to them, which they are bravely strug-

gling with in their various societies until they have been aptly styled the "Unquiet Sex" by a recent writer in a popular magazine, and we and the M.D.'s are kept busy trying to patch up the resultant quantity of worn-out nerves, and, according to the same writer quoted above, the future of our race is seriously menaced. At the present rate of burning the candle of life at both ends, a beautiful and serene old age, such as we have witnessed in one to whom I would like to offer, in closing, this slight tribute of memory, will be unknown to the next generation. I refer to Mrs. Lewis, D.D.S., of Burlington, whose gentle presence among the ladies we miss to-night, for since our last meeting she has been called home.

Such a calm and peaceful journey on the down-hill side of life is what we are desiring for our wives and daughters, and that they may have it, let us bear our share of social and ethical duties, and not only as an association, but as individual members of our chosen profession, declare for the *best* on all of the burning questions of the day, at the same time that we are earnestly striving to reach the dentist's ideal; the time when the dental office shall be shorn of its terrors, when extraction and artificial teeth shall be unknown because we shall have mastered the theory of decay, and painful and protracted operations shall be known no more, because such operations as are necessary shall be painless in fact as well as in theory.

DENTAL ETHICS.

By Dr. E. E. McGovern, Vergennes, Vt. Read Before Vermont State Dental Society, March 16, 1898.

Several years ago, when I was appointed one of a committee to revise our by-laws and code of ethics, I had no idea that I should again be called upon to discuss the subject, and certainly would not do so now were it not for an urgent request from the chairman of your executive committee, to whose instruction I owe my earliest ideas of dental ethics. Were I to enter into a discussion of the particulars of our everyday practice I should weary you in repeating what you already know. I shall therefore confine myself to a general view of the subject. In arranging a code your committee were filled with the enthusiasm of a new undertaking, and endeavored to fix a standard sufficiently high to dignify a profession still young in years, and with sufficient latitude to please the most liberal. Whatever our measure of success, your convention accepted our work, and the code as then adopted has been our standard since.

While I would not take the position of a carping critic, it seems to me pertinent in this twenty-first year of our organization to ask, Have we maintained that standard? Have we exceeded that latitude? A brief review may be in order here. That code seems to me to consider our duty to ourselves, our duty to each other, our duty to our patients. Our duty to ourselves demands that we make the most of our environments. The varying circumstances surrounding each one must make individual and personal rather than general rules necessary. We must all agree that a most important factor in our success and the first duty we owe ourselves is the securing of a good general education. Unfortunately, until within a few years this has not been considered strictly necessary to the making of a good dentist. Even some of our best colleges matriculated after very superficial examinations. It is gratifying to know that this matter has been greatly improved and to-day our best colleges require a fair preliminary examination before matriculation. In some states an examination before a state board of regents is required, which is a step in the right direction. We desire to be classed as professional men, we must therefore fit ourselves to meet the requirements demanded of professional men in other lines. The title "Doctor," as applied to a doctor of medicine, is practically a distinctive mark of scholarly attainment. While it certainly is not my design to lower the position we occupy by courtesy, if not always by education, yet I cannot help asking, How many of us are fully entitled to that much-coveted and jealously-guarded title, Doctor? It may be remarked, and with some justice, that we have in our profession men who are excellent dentists and yet are far from scholarly. This may be true, but to bring our profession up to the highest standard for which we all hope, our ranks must be recruited by young men of education as well as dental attainment.

I do not need to remind you that there is no profession so trying to the nerves as that of dentistry, requiring as it does so much that must be classed as surgical work. Sixty years ago, before the use of anesthetics, surgeons sometimes refused to perform operations that were considered best for the patient, simply because they could not bring themselves to endure the sight of the suffering they must cause. The dentist's work; much of it, causes so much suffering that he must have good nerve to be able to forget it sufficiently to do thorough work; therefore an important duty is the care of our

health. A discussion of the way in which that duty can be fulfilled would exceed the limits of a paper like this. Suffice it to quote from section 3: "The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right." The dentist, if any one, should deserve and claim the title of gentleman; there is scarcely any subject in regard to which the general public shows such deplorable ignorance as in that of dentistry, yet each one must be met with politeness and patience, attention and consideration, all characteristics of a gentleman, if success is desired. So true is this that I unhesitatingly affirm when I hear of a thoroughly successful dentist, he is a true gentleman.

Our duty to each other seems an appropriate theme to consider here, since in that case any lapse from gentlemanly conduct cannot be excused on the ground of dealing with ignorance. It is the most natural thing in life for man to be more or less selfish—this, I am sorry to admit, is as prominently developed in dentists as in men in other walks of life; but while we are naturally selfish, there is no reason why we cannot teach ourselves to be charitable and just. We are all striving to reach the same goal, but let us insist on fair play, as much as when we were boys. The poet who wrote,

> "Man wants but little here below,
> Nor wants that little long,"

lived before the time of the modern dentist. He wants a great deal, and that as well as professional fame is what he is striving for. Doctors of medicine agree upon a schedule of rates, reasonable for the place in which they live, and he who deviates therefrom without good and sufficient reason forfeits the esteem of his professional brothers. Will not the same rule hold good in our profession as well? Are we, when consulted by the patient of a brother dentist, sufficiently careful not to criticise his treatment? Do we put ourselves in his place and speak of him as we would have him speak of us? If we could sometimes forget our individual selfish aims in that larger *esprit de corps*, we would do much to elevate the standing of our profession. As we come to consider our duty to our patients we think, surely this should have been considered first, for the others are of necessity secondary to that—the means toward the end.

The duty we owe our patients is self-evident to every practitioner. In the first place, our offices should be made comfortable and

attractive to a degree commensurate with our circumstances and convenience, with as little display of instruments and appliances as possible. Our reception room should be comfortable and home-like, free from disagreeable odors or other disturbing elements, and should be, so far as practicable, separate from the operating room. The operating room, which is the "star chamber" of dentistry, should be supplied with all conveniences in the way of instruments and appliances necessary for the different operations which we are called upon to perform. In this connection I deem it of the utmost importance that we keep our instruments not only thoroughly disinfected, but they should be well assorted, sharp and keen. Much of the dire dread and accompanying pain can be alleviated by using well adapted sharp instruments. It has been remarked, and with some truth, that the best cataphoresis is a steady hand and a sharp instrument. We owe our patients immaculate cleanliness. In person or surroundings nothing should appear to offend the most sensitive; even in the finger tips no suggestion of bacteriological deposit should exist.

I quote from a recent journal as expressing clearly my own views: "Meet you patient as a friend, cordially, familiarly, cheerily. Easy simplicity, social suavity, and professional courtesy must be instinctive, spontaneous, hearty. Our success in receiving our patients is half the battle. We must have the dignity of a man of business, the reserve of a professional and the polish of a gentleman, yet be as kind, gentle and tender-hearted as a child." I am convinced that one who could meet these requirements has most of the characteristics of the ideal dentist; yet we have in our ranks many whose earnest efforts to reach that ideal have met with a large measure of success. What boundless patience with ignorance, what gentleness with suffering, what courtesy to meet rudeness, what firmness and decision with the timid, what forgetfulness of self are required, only we who go the weary round each day can know. We are confronted daily with the grossest ignorance of anything pertaining to dentistry or even to decent cleanliness. It is scarcely reasonable to expect in our patients any great knowledge of the principles of dentistry, and we are or should be always ready and glad to explain to willing listeners, but those who come with preconceived ideas of what should be done, and, right or wrong, accept no denial, tax our patience to the utmost. It is hard

for such people to believe that pride in honest work is a stronger power than the mighty dollar. While I would be the last to say anything disparaging of woman, whose desire to make herself attractive looking has added materially to our bank account, I still look regretfully back upon the times when I have put the smallest, whitest, prettiest teeth where nature had originally put far different dentures, just because, "When a woman will, she will, you may depend on't; and when she won't, she won't, and there's an end on't."

Gentlemen, let us make it an important point in our ethical code that, before the duty of pleasing our patients comes the duty of doing good, honest work. Is my ethical code old fogyish, somewhat behind the times, out of date? Show me a better standard and I will adopt it. For I agree with Brer. Remus when he says: "Dar aint no wuss victim of misplaced confidence dan de man who gets to tinking he knows eberyting." Perhaps Prof. Thompson put it better when he used to tell his students, "No one of us is quite infallible, not even the youngest." Every year brings new ideas and new inventions that are indeed a help to our profession, but let us be sure they are right before we accept them. I will gladly mount the wheel of progress with anyone of you, but we have all seen many a scorcher come to grief, and while our wheel goes swiftly and well over the smooth road, there will be many rough spots and many a hard climb, where we will be glad to mount again the good old steed that served our fathers so well.

THE COUNTRY DENTIST.

By Dr. J. A. Pearson, Barton, Vt. Read Before Vermont State Dental Society, March 16, 1898.

One of the questions which confront the country dentist is how to make his practice pay him. If he has entered the profession with the one idea that he can get a living easier than in some other way, and looks at the business wholly from a commercial standpoint, he is likely to be an unpleasant one to practice beside.

The sphere of the country dentist to a great extent is that of a pioneer or missionary. When work is being done for less than good, conscientious, honest work can reasonably be done for, the quality of it is quite likely to deteriorate with the price. I can see no reason why the country dentist should not and cannot receive a proper remuneration for his services, provided he is up with the

times and the community in which he is located appreciates and understands the advantages derived from dentistry. It must be borne in mind, however, that many of us are practicing in localities so situated we seldom receive a call from another dentist or come in contact with others in the profession, thus losing the stimulus generated by social intercourse and interchange of thought with one another, therefore we must make a greater effort to keep in touch with the times or we will fall short of what we might be. It is discouraging to plod along year after year in a community which, as a whole, are ignorant of the advantages derived from our profession, only so far as to relieve them of an aching tooth by extracting it, when it should be saved. The only question being asked when told they should be saved by filling is, what it will cost, and will we warrant them to last as long as they live? if not, they might as well have them out now as ever. When they bring a child to have the six-year old molars extracted and we tell them they are permanent teeth and should be saved, they emphatically inform us we are mistaken, they are certainly temporary teeth because they had theirs out and have others in their place. They go from our office fully convinced we do not understand our business, or we are trying to get their hard-earned money by filling temporary teeth, not realizing if they were temporary teeth we were conferring on the child one of the greatest of blessings, so they leave us and feel glad they have not let us fool them, and we are left to ponder and wonder.

I do not wish to convey the idea that all of our patients are like the above, for we have some very intelligent ones who fully appreciate our efforts to serve them—and who does not appreciate a good patient; but far too many of our patients are so ignorant of the first principles and benefits derived from dentistry that we are sometimes discouraged in our efforts to do our best for them. Perhaps some of you who have a good practice among people that understand the advantages derived from the proper care of the teeth, will say, "Let them go." We cannot afford to, for we need their business and they would want our work as well as your patients do yours did they understand the benefits derived from it. There should be an effort made to educate the masses in this line and show them the importance of the teeth to perfect health. Were the people as a whole as well informed on this subject as they are on the general questions of the day, there are not one-half dentists

enough in Vermont to supply the demands for work at good prices. I think our local papers should be induced to publish short articles on the importance of the teeth and their care. It is very slow business for the dentists to educate the people, coming in contact with comparatively few of a community and talking with them a few minutes when they are half credulous, wondering if we are really telling the truth or are after the work.

There is no reason, with the dental journals published, why the country dentist in his usual leisure hours should not be well informed on what is going on in the profession. There are many good reasons why all dentists in Vermont should become members and contributors to the Vermont State Dental Society; their annual dues are needed to carry on the work of the society, so the Executive Committee may get the best talent possible as demonstrators and essayists at our annual meetings. It is the only dental society in Vermont, and is recognized as an important factor by our legislature. For our own benefit we should be identified with a society which is recognized by the leading dental societies of the United States. By attending its meetings we come in contact and become personally acquainted with some of the best men in the profession, men whom we should consider it an honor to know. Often we become intimately acquainted with our neighboring competitors whom we have never met, and know them only through some of their disaffected patients, who portray them to be wretches unworthy of consideration; but when we see them face to face we learn they are men, whole-souled, honest and glad to aid us in any way they can. Had it not been for the state society, we would not have had a Vermont Dental Law, for a long time at least, if at all. Had we not had a state law, the country places would have been overrun with tramp dentists, cutting down prices so it would have made it impossible for anyone to have done honest work and received a living price for it.

All honor to the founders of the society. I remember with gratitude and pleasure the kind remarks and advice of some of them, although I never became personally acquainted with many. It has been my experience with the members of this society, that they have been always as willing to give advice and counsel as we were to receive it. I think they should know their kindness is appreciated.

I believe the country dentists are trying to do honest work, and a great deal of their work will compare favorably with any. Amal-

gam and gutta-percha are a boon to the country dentist, enabling him to do good serviceable work at the prices he is obliged to charge. There is no reason why the country dentist should not be just as thorough as if he was practicing in a city, and sometimes more so, for often he can take all the time he wishes, and perhaps he had better, for if done too quickly the patients may think he is overcharging them. We should not be afraid to acknowledge it when we cannot do a class of work and do it right. We should be frank and honest with our patients, and if they wish for work we do not or cannot do, tell them so, and assist them to get what they want by sending them to some reliable dentist who does that class of work. In doing this we simply act the part of honest men and do not degrade ourselves.

COMPOSITION OF GUTTA-PERCHA.—Dr. E. F. A. Obach shows that the purified substance probably consists of a hydrocarbon (pure gutta), having the formula $C_{10}H_{16}$; albane, $C_{10}H_{16}O$; fluavile, $C_{40}H_{64}O_3$; and a variable component named guttane. Pure gutta possesses all the good qualities of gutta-percha in a much enhanced degree, becoming soft and plastic on heating, and hard and tenacious on cooling, without being in the least brittle. The resins appear to be simply accessory components, which have a decidedly detrimental effect when they preponderate. Water, wood, fibres, and barks, etc., occur, of course, merely as mechanical impurities of gutta-percha.—*Jour. Soc. of Arts, xlvi., 122.*

PREHISTORIC DENTISTRY—Skeletons unearthed in whose front teeth gems were set.—No regular burying-place has yet been found at Copan, but a number of isolated tombs have been explored, says the *Century*. The location of these was strange and unexpected—beneath the pavement of courtyards and under the foundations of houses. They consist of small chambers of very excellent masonry, roofed sometimes by means of the horizontal arch, and sometimes by means of slabs of stone resting on the top of the vertical walls. In these tombs one, sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cements had long since moldered away, and the skeletons themselves were in a crumbling condition and gave little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light—namely, the custom of adorning the front teeth with gems inlaid in the enamel, and by filling. Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes; for all the tombs opened, from their associations with prominent houses, seemed to have belonged to people of rank and fortune. The stone used in the inlaying was a bright green jadite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row and inlaid with a little disk of jadite, cut to a perfect fit, and secured by means of a bright red cement.

Digests.

EROSIONS AS FOUND IN THE ORIENT—CAUSE AND EFFECT. By C. L. Snyder, D.D.S., Freeport, Ill. Read at Northern Illinois Dental Society, Oct. 1897. Erosion as known in dentistry is a loss of tooth structure, usually occurring on the labial surfaces of the teeth, and is peculiar, owing to the polished condition of the so-called cavity. It is not my intention to dwell at length upon the etiology or pathology of erosions, but I will endeavor to give you the facts concerning them as found in the orient.

The first sign or symptom of an erosion is a slight groove or depression, usually occurring on the labial surface of the tooth near the margin of the gum, and frequently sensitive when touched by a steel instrument or some metal that has a tendency to produce a galvanic current. The pain produced by the means just mentioned is extreme. I have had patients jump and shriek, showing signs of far greater pain than that produced by touching a live pulp. The saliva and mucus found near the affected parts is usually acid and in advanced cases a decided acid condition is not uncommon. There is also an odor peculiar to these far advanced. I became so familiar with this that I could frequently diagnose them as soon as the patient opened the mouth. I believe the majority of cases in America are found on the central and lateral incisors. In Singapore the first bicuspids seem to be the first sufferers. These are followed closely by the cuspids and second bicuspids, then the incisors, and lastly the molars.

The teeth on one side of the mouth may be affected, while on the opposite side the conditions are perfectly normal, but in the majority of cases erosions occur in pairs; that is, when the bicuspid on one side is affected we look for the same condition on the opposite side of the mouth. In cases where the teeth are irregular, caused by a crowded condition of the arch, the teeth that have been crowded inward and do not come in contact with the lips are seldom affected. A year or so after I became settled in Singapore I began to make a study of these cases. I found that out of one hundred patients that came to me for dental services fifty-seven were suffering more or less with erosions. Scarcely ever did I find the perfectly healthy gums; the tendency was for them to recede and the unnatural

exposed part of the tooth then became sensitive. The attacks seem to be about the same upon male and female. A great difference exists in nationalities; the English, who are the worst sufferers, are followed closely by the French. The Armenians seem to be affected equal to the English, but as they are comparatively few in number in Singapore, I cannot lay down any definite percentage. The high class of Malays and Chinese comes next, while the cooly class seems to be little troubled. One peculiarity of this complaint is that most Europeans never experienced any trouble before leaving their native land. The well-to-do, that is those who live high, seem to be the worst sufferers, especially the consumers of wine and other beverages. I do not mean drunkards, as drunkenness is seldom if ever seen in the orient, especially among the better class.

I now began questioning my patients concerning their physical condition. I directed my inquiry more particularly as to whether they or their parents ever suffered with gout, and found that about 70 per cent were suffering with gout or were the offspring of gouty parents. I grew very enthusiastic over this investigation; I became satisfied that erosion was a manifestation of gout. After a time I found conditions that did not harmonize with my theory of erosion and gout and I began to make further investigations, not only among people suffering with erosion, but more particularly with people who were free from it. Much to my surprise I found that many who had perfect teeth and whose gums presented a decidedly healthy condition were among the worst sufferers of gout, and that the Armenians and Malays, especially the former, who suffer severely with erosion, are scarcely ever known to be troubled with gout.

Summing up these investigations I came to the conclusion that erosions were peculiar to three conditions: high living, especially consumers of wines; a gouty diathesis, and climate. There is no doubt but what the climate of that tropical island has more or less effect on the system in general, and this in a short time manifests itself upon the teeth. It is my candid opinion that erosion is caused by an acid condition of some kind, peculiar to a physical condition of the system similar to that found in gouty subjects, and that this condition is due principally to the diet, is hereditary and is much hastened by a hot, moist climate.

There seems to be but two ways suitable for the treatment of erosion. In the early stage I have had excellent results by using

nitrate of silver. Usually two treatments are sufficient. I will mention a little device that to me was indispensable. First secure a small silver wire about eighteen gauge, adjust it in a broach-holder or some suitable handle, then by heating slightly over an alcohol lamp you can pick a small crystal of the nitrate of silver which will form a bead on the end of the wire; or better still, the nitrate of silver may be melted in a small platinum spoon easily made for that purpose, then by touching the melted mass with the wire, a sufficient quantity will adhere and may be carried to the tooth with safety. This of course blackens the cavity and is not a suitable treatment for the anterior teeth. In very sensitive cavities I find that this nitrate of silver treatment applied several days before filling saves the patient a great amount of pain. In advanced stages there is nothing to do but fill or crown. I have had cases where the entire labial and one proximal surface had wasted away and another case where the cutting edge, together with the labial surface, was affected so badly that crowning was necessary.

The secret of success in filling eroded surfaces is to cut away sufficient tooth structure so as to reach every possible affected part; also to cut well up underneath the gum, so as to give no chance for a recurrence. The rubber-dam must always be used, and gold is the best filling material. Always allow at least a tooth on either side to pass through the rubber and see that the holes in the rubber-dam are punched far apart. Ligatures should be put around the adjoining teeth, but never around the tooth to be filled, as it will only be in the way and prevent the clamp being pushed up to its place. I always slit the gum just over the tooth to be filled; this allows the clamp to be pushed well upon the root, without causing much injury to the gum. These little flaps will heal in a few days and come well down over the upper margin of the filling. It is always best to polish the filling after the clamp and rubber have been removed. A small piece of moist sponge held on the corundum wheel will keep the parts free from blood. I always use a small steel instrument with a notched point and with the use of this I manage to keep the gum well out of the way. The polishing may be completed by the use of pumice or any desirable material.—*Dental Review, Feb. 1898.*

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OBSTINATE HEMORRHAGE. By W. G. B. A case of unusually obstinate hemorrhage following the rough extraction of a

superior molar came under my notice. The outer and inner plates of the alveolus were severely smashed, one gash, made by the forceps, extending a quarter of an inch into the hard palate. Various preparations had been used in the abattoir where the patient had the operation performed. Tannic acid was on hand, so that was tried, and failing perchlorid of iron was used on top of it. This of course was an incompatible mixture, forming tannate of iron, and rendered both inert. An hour after the operation the dentist telephoned me and the patient arrived. After cleansing the socket with hot water and lysol, I packed lycoperdon giganteum into the wound and socket, and retained it, covering the entire extent by a compress of spunk under a steel band fitted to grip the outer alveolus and the wounded palate. The effect was instantaneous. When I was a student of Dr. Charles Brewster he was using lycoperdon (puff-ball) for hemorrhage, which was much more common than now. Sir B. Ward Richardson thought the change due to the more general use of fruit, and the improvement in the ordinary diet which produced better blood. Sir Benjamin devoted much attention to the fungus in a work he wrote on the medical treatment of the disease of the teeth. Dr. Brewster was never without a good supply of puff-ball, and in common with him I never failed with it, and never depended upon anything else, so far as alveolar hemorrhage was concerned. Several cases of spontaneous bleeding from the gums were arrested by packing it into the interdental spaces. I have had several cases of vicarious bleeding from the gums, which the lycoperdon arrested. It is found in the fields, especially on sandy soil, in the fall of the year. Dr. Brewster found the greatest virtue to lie in the genus lycoperdon bovista, which is smaller and scarcer than the genus giganteum. The doctor conceived the idea of medicating it with camphor and carbolic acid to remove certain objections. The theory of the effects of the fungus is explained by the excess of phosphate of soda, the styptic properties of which were once in repute.—*Dominion Dental Journal, March, 1898.*

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HINTS BY A LAZY MAN. (1) You can cut vulcanite with a file better when both are dry than wet. If you think you need a new file, dip your plate in dry plaster of paris, rub it off with a wheel-brush, and often you will find that the fault is not in the file. (2) After you have polished your plate, sprinkle a little dry

plaster on it and give it a run over the soft wheel-brush. (3) Tack a square piece of bed-tick or apron cloth under the part of the bench where you work. It will always be there. Pull it over your knees when you sit there to work. Keeps your pantaloons clean and often keeps you from saying naughty words, as it catches teeth you might drop on the floor. (4) When your rubber overshoes wear out, keep the soles. Very handy if fastened on a block convenient to use. The heels make good bench blocks. (5) Keep your old kid gloves and wear them when sandpapering or polishing artificial sets. Rub vaseline into your finger-nails and over your fingers before putting on the gloves. (6) When your dental engine kicks or makes a noise at the joints, oil it a little. If that does not stop the row do not swear at the manufacturer until you have got down on your marrow-bones and tightened up screws that may be loose. If that succeeds shake hands with yourself; if it does not, smash something. It will ease your mind. (7) Cover your dental engine with a cover the shape of an old candle extinguisher. (8) Old journals. Look back over them from time to time, and you'll discover that you either never read them before, or that you've forgotten many valuable hints they contain. (9) Most women do not mind so much being hurt, as they mind having a nice dress spoiled. Use a rubber apron for the dear creatures when taking impressions; you'd make a much better one, too. (10) Saw large spools in two. Handy to lay instruments on, for bench blocks. Drive nail through a spool on your work-bench. Fasten spools anywhere convenient in or near your operating stand so that they will hold your floss silk and gilling twine. (11) Another very nearly serious explosion of pyrozone tube is reported. When you are plainly directed to keep it in a cool place; to cool it in icy water and wrap the tube in a towel before opening it, you should obey instructions. A man who lights his pipe on a can of gunpowder deserves to be blown up. (12) If you have a silver-plated fountain spittoon, do not let your patients eject into it loose particles of amalgam. They may adhere to the edges of the basin, and irreparably corrode the plating. One of the handiest things about a chair is the small hand spittoons. I use a china bowl if I use iodin in the mouth. (13) Keep an assortment of small rubber rings on upright pieces of wood or steel, the size of a match. I often use them for ligaturing rubber dam. Slip on and off easily; do not hurt gum like silk. Handy too in keeping in cotton, etc.,

over temporary preparations in large and shallow approximal cavities. Can cement them over cavity. (14) Common cut tacks. Drive them in any form you like into plaster models to make air-chambers. Use them for some lower sets. Do not leave them on your laboratory stool. (15) Fasten two pieces of thin wood, double the size of a match, placing a small rubber ring between them before you fasten them. Then slip over each piece small rubber ring, to meet each other. Make handy tweezers for cotton pellets dipped in iodin, or for any purpose which would injure steel. I think I must have stolen this idea. (16) Corks, champagne corks especially. Better than buff cones or wheels. Cut them into any shape to get into any hole or corner. Thin slices make best non-conductor for exposed pulps. Stick laboratory files into them for handles. A big piece square makes fine laboratory block. Cut a lot of them into shape for mouth gags, and tie string to them. Cork soles best soles for the dentist's feet.—Must stop; very lazy again.—*Dominion Dental Journal, March, 1898.*

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SECONDARY OR STORAGE BATTERIES FOR CATAPHORESIS. By Charles A. Hawley, D.D.S., Columbus, O. Read at Ohio State Dental Society, Dec., 1897. What is a storage battery, how does it act, and what is its special fitness for cataphoresis? are the questions we wish to consider in this paper, and it is the belief that the better we understand the construction or action of an appliance of any kind the more intelligent and successful will be our use of it, that prompts the presentation of the subject for discussion here.

The history of the development of the storage battery goes back over a period of nearly forty years. Many attempts to store electricity by means of its action on various substances had previously been made, but Plante, a Frenchman, discovered the secret, the adaptability of lead for the purpose. He immersed two lead plates in dilute sulfuric acid, and connected one to the positive, the other to a negative pole of a primary battery. A slight chemical change was produced between the plates and the electrolyte, and when they were connected by a wire an electric current was produced. They were then connected in a reverse order and charged and discharged, increasing the current each time, and as the chemical change become greater the discharge of current also increased. This process was continued for several months, with the final result of

producing a "cell, which when charged had a thick coating of lead dioxid on the positive plate and of spongy lead on the negative, but when discharged had a coating of lead sulfate on both." During the discharge a very powerful current was produced, enough to melt iron rods. Though in the present improved storage batteries the style of cell and the process of forming are much changed, the principle is the same—*i. e.*, the electricity is stored or accumulated in the form of an unstable chemical compound. The peculiar and valuable property of this compound is that its chemical energy can at any time be reconverted into electrical energy by connecting the two plates.

The current produced in the complete discharge is practically equal to that used in producing the chemical change in storing. In winding a clock we store the energy of motion by the tension of a steel spring; in the storage cell we might compare the action of the chemical compound to the tension of the clock spring, and electricity with the energy of motion, or the muscular power. This action is entirely different from that of a primary battery. In the primary battery chemical disintegration of one of the plates by action of fluid produces the current, but this process can never be reversed.

A number of changes have been made in the form of storage batteries, leading up to the greatly improved and nearly perfect ones in use now. When the exact nature of the chemical compound on the plates was found it was but a step to coat lead plates with lead oxid and sulfuric acid, which by a few days' charging could be changed to lead dioxid on the positive and spongy lead on the negative plate, thus saving the months of time in forming. Plates have also been made in the form of grids, with the active material, in the condition of paste, placed in the wholes. The trouble with this form of plate has been found to be in the bending or buckling during discharge, which is caused by the great expansion of the paste. The paste is also apt to scale off the plates or fall out of the grids and, accumulating at the bottom, short-circuit the cell. Batteries are now on the market which claim to overcome completely these objections.

The especial fitness of storage batteries for cataphoresis lies in their constant and steady voltage during discharge, which is due to several causes: First, the internal resistance of the cell is very low, owing to the small space necessary between the plates. With perhaps a few exceptions, the internal resistance of primary batteries is

very high and interferes largely with their efficiency. Second, there is no such thing as polarization of a storage cell. Polarization unfits most primary cells for closed circuit work, or for holding a steady current for any length of time. The attempt to overcome it has led more than anything else to the great number and variety of cells on the market, and the number in itself is an evidence of failure. In comparison with the Edison direct current, the storage battery presents several advantages which we will mention briefly: First, freedom from the influence of induction, currents along the line, or other causes which produce variation of voltage. Second, absence of danger during storms, accidents at power station, or ground connection by fountain spittoon. Third, it obviates reducing with a controller the unnecessary high voltage of the Edison current.

The character and rate of discharge of a storage differs considerably from that of a primary battery, in that a very much larger volume of current can be obtained by decreasing the resistance in the external circuit. The capacity of a storage battery is measured in ampere hours, or the number of hours the battery will, when fully charged, discharge one ampere current before becoming exhausted. But the discharge can be completely controlled by varying the resistance in the external circuit. For example, a ten ampere battery will discharge one ampere for ten hours, or, reducing the external resistance, ten amperes for one hour, or, reducing still further, twenty amperes for one-half hour, forty amperes one-fourth hour, etc. If used with very great external resistance, as in cataphoresis, it would discharge a current of say five milliamperes for two thousand hours. At this rate, if used one hour a day every day in the year, a ten ampere battery would last between five and six years before becoming exhausted. No such extent of current can be obtained from a primary battery of equal voltage. We might here again compare the storage battery in its discharge to the action of a clock-spring, which, when wound, can be released at once by a sudden spring or by a steady motion for a long time. The batteries can be charged from almost any source of current, provided the voltage is at least ten per cent higher than that of the battery, as otherwise the action would be reversed. The use of a battery for five or six years, as alluded to above, without charging, would probably not be practical, as manufacturers claim that to keep them in best condition current should be added much oftener.

In practical results in cataphoresis I have found that the storage battery carries out all that would be expected of it from theoretical consideration. After using the dry-cell battery and Edison direct current with various shunt controllers, I have had much better success with the storage battery with a series controller. The application is smooth and painless, and the pain limit can be very closely followed in increasing the current without signs of fluctuation. In other words, my experience seems to indicate that in cataphoresis the source of the current is as important a factor as the form of controller.

Discussion. Dr. Wm. H. Hirsh, Piqua, was opposed to the use of the storage battery for many reasons. The storage cell made up of lead plate immersed in sulfuric acid is not capable of originating any current in itself, but gives off current which it receives from some outside source. If it is left idle for any considerable time it will become sulfated and its strength will be lost. It must be used almost constantly to give the best results, and the best cells only give out ninety per cent of the current which has been put into them. Most cells will not give higher than from fifty to sixty per cent. The constancy in voltage is no better than the sal ammoniac cells, and bichromate cells, or dry cells, are just as regular. The only case in which the storage battery is to be preferred is when you are using a shunt instrument of low voltage. His experience had taught him that storage cells were very dirty and objectionable on this account. When compared with the 110-volt current, the storage cell is superior, but there is no occasion to use the 110-volt current, nor should a battery of high capacity be used when only two to five milliamperes are needed.—*Ohio Dental Jour., Feb. 1898.*

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METHOD OF OPERATING FOR SMALL EPITHELIOMATA OF THE LIP. By Charles N. Dowd, M.D., New York. Cancers which come on the lip are situated in a most favorable position for cure. They are seen soon after their inception. The tissues can easily be removed about them, and the lymphatics through which they spread are so situated that enlargement can readily be noticed and their removal quickly accomplished. Yet in spite of these favorable conditions the mortality from these growths is large. The report of 305 cases from Bruns' clinic gives the following details: 28 cases were inoperable or declined operation for

other reasons. Of the 277 patients who had been operated upon, 99, or 35.7 per cent, died of recurrence; 16, or 5.7 per cent, died from the operation; 71, or 25.6 per cent, died from other diseases without recurrence; 89, or 32.1 per cent, were living and healthy; 2, or 0.7 per cent, were living with recurrences. 227 of the cases were operated upon three years or more before the report, and 106, or 46.2 per cent, had lived three or more years without recurrence.

This certainly indicates the gravity of the disease, but as the earlier cases of the series date back many years they do not fairly show the present status of the subject, since patients now seek surgical aid at an earlier date than formerly and operation is much more successful.

The advanced stage which the growths had reached at the time of operation is indicated by the fact that out of 290 patients in whom the location of the growth is recorded, 66 had all, or nearly all, the lower lip involved.

The disease is not uncommon. Wörner, from the statistics of several European clinics, found that 32.4 per cent of all the epitheliomata which came to operation were upon the lip. They constituted 54.5 per cent of all those upon the face and scalp. At the New York Cancer Hospital during the last five years patients with cancer of the lip have been admitted at the rate of about one a month.

Each year patients are seen there who have been previously operated upon but who have recurrences in the tissues beneath the lower jaw. In the hope of helping to prevent such recurrences I venture to call the attention of the society to certain elements in the treatment of these growths when they first appear. The patients usually consult a physician before the growth has reached a large size. Frequently it is not larger than a split bean when it comes under medical care. The persistent ulceration is the most important element in the diagnosis, although a hard base is usually present and at least a part of the margin is usually excavated. The ordinary method of treatment is by excision of a wedge-shaped piece of the lower lip and sewing the edges of the wound together—an operation which is easily done, which gives a good cosmetic effect, and which in the main is successful. It is very generally done by physicians who do not undertake the severer kinds of operations. The later history of such patients is not usually followed. They will not report to their surgeon or physician, as they consider their ailment a

slight one and they are usually lost sight of. Still a sufficient number of them are afterward seen with recurrences to indicate that the operation is not all that could be wished.

Gussenbauer has made an exhaustive study of lymphatic infection in cancer of the lip and has found that it almost always exists. Among 32 ordinary cases which came to him for operation, from six months to two years after the beginning of the growth he found lymphatic cancerous disease present in 29 and in the remaining 3 there were such changes as indicated a beginning infection. He found the lymph nodes which lie in front of the facial artery close to the upper border of the submaxillary salivary gland to be the ones most frequently infected. He advocated their removal.

Wörner also advocated the exploration of the submaxillary tissues in operations for cancer of the lip, whether enlarged lymph nodes could be felt or not, and stated that he had often found them present when they could not be felt before exploration was made. Among 123 patients in whom the clinical appearance was noted the submaxillary glands alone were enlarged in 34; the submental glands alone were enlarged in 30; both submaxillary and submental glands were enlarged in 27; no enlargement was detected in 32.

Winiwarter states that the ordinary course of lymphatic involvement is, first, the submaxillary group, then the submental group, then those on both sides of the neck down to the clavicle.

It is to this submaxillary group that I wish particularly to call your attention. These glands bear a relationship to beginning epithelioma of the lower lip very similar to that of the axillary group to cancer of the breast. Enlargement is usually first noticed in one or more lymph nodes which lie contiguous to the anterior border of the submaxillary salivary gland, and which can ordinarily be palpated if one finger is put in the floor of the mouth under the lower margin of the body of the jaw, just in front of the facial artery, and counter-pressure made with the fingers of the other hand on the outside. A very small amount of swelling can thus be discovered. During the past year it has been my fortune to operate upon four cases of small epithelioma of the lower lip, which had been examined by men who were careful in diagnosis, but who had stated that there were no lymphatic enlargements. Yet when examination was made in the manner indicated enlarged lymph nodes were detected in each case.

The fact that these glands are enlarged does not necessarily mean that they are cancerous. Instances are recorded in which palpable lymph nodes have been left after removal of a portion of the lip and in which the swelling has subsided. In those of my case, specimens from which were examined microscopically, no cancer cells were found; the lymph nodes from the fourth case were lost before reaching the pathologist. Still one must feel that enlarged lymph nodes near a cancer are a great menace and should be removed. Gussenbauer's researches and the recurrences which are seen from time to time strengthen this belief to the extent that a failure to remove them seems very culpable.

The method which seems best adapted for these cases is to make an incision under the body of the jaw about an inch in length, reaching forward from the position of the facial artery; this is carried through the skin, superficial fascia, platysma, and deep fascia, down to the submaxillary salivary gland, to the anterior border of which the lymph node or nodes are attached. The posterior border of the mylo-hyoid muscle may be pulled forward to facilitate their finding and removal. Through the incision the adjoining tissues can be examined for the purpose of detecting other enlarged lymph nodes, particularly along the facial artery and in the floor of the mouth. If such are detected they should be removed, and of course the incision should be made as large as necessary. Incisions which are not more than an inch in length on each side do not make a scar which can be considered a deformity; if situated just below the border of the jaw they are hardly seen. This procedure should not lengthen the time of healing from the operation, as the submaxillary regions should heal as quickly as the lip does.

The chief objection is the fact that an anesthetic has to be given—a very slight objection when compared with the benefits of the operation, so slight that it need not be considered.

There may be some exceptional instances when these incisions need not be made, as there are some persons with thin necks in whom enlarged lymph nodes can be detected by proper palpation, if they exist. But so thorough and careful a bimanual examination should be made in each case that slight enlargements can be detected, and if they exist, or if there is any doubt about it, the exploration should be made. On this basis there will be very few patients with even small epithelioma of the lower lip in whom the

submaxillary spaces will not be explored. The recurrent cases and the records of operations indicate that this is not often enough done, although the subject has been fairly before the profession for a number of years.

The removal of the growth itself from the lip should be accomplished by taking away a good-sized wedge of tissue. The cut should be one-fourth to one-half an inch from the visible edge of the epithelioma. A large portion of the lip can be removed without making an unsightly deformity.

If more than two-thirds of the lip is taken away it is usually wise to make a small incision outward from the angle of the mouth, cutting the mucous membrane one-half or one-third of an inch higher than the skin, sewing this over to the skin margin so as to form a good vermilion border, which will be a part of the newly-constructed lip, and then sliding the flap toward the median line. A compensatory V-shaped piece may be taken from the tissue above the incision if necessary.—*Medical Record, March 26, 1898.*

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TOTAL EXTIRPATION OF STOMACH. That the stomach may be completely removed without seriously changing the metabolism and nutrition of animals has been demonstrated a number of times. How long an animal will live in good health without a stomach is still a matter of doubt, as the time which has elapsed since the institution of this line of experimentation has been too short to form a final opinion. The celebrated "Czerny dog," whose stomach was removed by Czerny in 1878, lived five years and was then killed for anatomical investigation. The post-mortem showed, however, that a small part of the cardiac extremity of the stomach had not been excised, and a small sac, with gastric functions, had been formed from this remnant of the stomach. Excepting the case which forms the subject of these lines, the gastrectomies performed on the human subject have never been complete; a small part of the cardiac extremity always remained attached to the œsophagus. It was considered by gastrectomists impracticable to remove the entire cardiac extremity of stomach, as it seemed very difficult to pull down the œsophagus sufficiently for total extirpation of the organ.

The first and so far only total gastrectomy was performed about three months ago by Dr. Carl Schlatter of Zurich. In Dr. Schlatter's patient it was possible to sufficiently pull down the stomach to

sever the cardiac extremity in œsophageal tissue. Two conditions may have contributed to this, in a carcinomatous stomach, unusual condition. In the first place the organ was readily movable, and secondly, the weight of the carcinomatous stomach may have dragged down the œsophagus more than usual. According to Dr. Schlatter, the prosector at the University of Zurich has determined in his investigations in the dissecting room that the lower subdiaphragmatic portion of the œsophagus can always be elongated by traction. According to these investigations it would appear that where a carcinomatous stomach is freely movable, as in Dr. Schlatter's patient, a total extirpation of the organ is usually feasible. In reporting the case Dr. Schlatter stated that he made considerable traction in pulling the stomach downward before severing the œsophagus. His patient was in relatively good condition three months after the operation. Microscopic examination of the specimen showed the neoplasm to consist of a small-celled alveolar glandular carcinoma. As the case is the only known total ablation of stomach that has ever been performed upon a human subject, considerable interest is attached to it from a physiological standpoint, and scientific investigation with reference to physiological functions have been conducted at the chemical, physiological and pathological laboratories of the University of Zurich. The conclusions based upon these investigations have been briefly summarized by Dr. E. C. Wendt in a discussion of the case in the *Medical Record* of December 25, 1897, as follows: (1) The human stomach is not a vital organ. (2) The digestive capacity of the human stomach has been considerably overrated. (3) The fluids and solids constituting an ordinary mixed diet are capable of complete digestion and assimilation without the aid of the human stomach. (4) A gain in the weight of the body may take place in spite of the total absence of gastric activity. (5) Typical vomiting may occur without a stomach. (6) The general health of a person need not immediately deteriorate on account of removal of the stomach. (7) The most important office of the human stomach is to act as a reservoir for the reception, preliminary preparation and propulsion of food and fluids. It also fulfills a useful purpose in regulating the temperature of swallowed solids and liquids. (8) The chemical functions of the human stomach may be completely and satisfactorily performed by the other divisions of the alimentary canal. (9) Gas-

tric juice is hostile to the development of microorganisms. (10) The free acid of normal gastric secretions has no power to arrest putrefactive changes in intestinal tract. Its antiseptic and bactericidal potency has been overestimated.—*St. Louis Medical Review.*

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TWO CASES FROM PRACTICE. By Dr. Mark Hayter, Dalles, Ore. Read before Oregon State Dental Association Oct. 14, 1897. *First Case.* Mr. B., aged 20 years, while cutting wood in March, 1896, was struck in the mouth by a stick and the superior central incisors were broken. The fracture was complete, all that held the parts together being the pulps, and gums on the palatal surfaces. The detached portions included about one-half the labial surface of the right central and a little less than one-half the left, and extended to the alveolar process on the palatal surface.

Treatment. The loose crowns and pulps were removed, canals temporarily filled, cotton packed so as to prevent the gums from closing over broken surfaces, and remedies applied to remove soreness from surrounding parts. After all soreness had subsided posts were fitted to the pulp-canals and detached crown, and as the parts fitted together exactly, short grooves were cut from the canals for the surplus cement. The crowns were then cemented to place, and in due time the gums became reattached. The lines of fracture could not be noticed, except on close examination. Some eight months or more after the operation the left crown gave way. I have not had an opportunity to examine the case since, and do not know whether the crown was broken or the cement failed to hold. The other crown is still in place, doing good service.

Second Case. Mr. K., aged 40 years, came to my office on the 24th of last August with the left lower central incisor badly ulcerated and so loose that it could have been removed with the thumb and finger. Upon extracting the tooth the root was found to be more than half absorbed. I had intended to try replanting, but the absorption made it impracticable. It was then decided to insert an extension bridge, using the crown of the tooth removed for a dummy. All but a small portion of the root was sawed off, the remainder rounded, and a gold cap swaged to fit, allowing the edge to slightly overlap the enamel. A post was fitted to the pulp-canal and cap, then removed, soldered and reset, chloro-percha being used, and finished with suitable disks. Cap crowns were made for the remain-

ing central and this dummy, extending about one-third of their length. The crowns were soldered together and dummy cemented to place. After the soreness had left where the tooth had been removed, the piece was cemented to place, with the dummy resting firmly upon the gum. This made a nice-looking and so far very satisfactory piece of work. The point I wish to bring out is this: Is it good practice to use the natural crowns in cases of the nature of those just reported?—*Pacific Med.-Dent. Gazette, March, 1898.*

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APPLICATION OF HEAT IN DENTISTRY FOR THE DESTRUCTION OF PATHOGENIC GERMS. By Dr. J. H. Woolley, Chicago. Read before Chicago Odontographic Society, Feb. 21, 1898. A tooth that is infected with a putrescent pulp needs the most powerful antiseptic agents we can find for the destruction of pathogenic germs, one which at the same time is nondestructive to the tooth structure and tissues in the apical space. In the study of this subject we wish to discover the best methods of applying antiseptics. When the pulp of a tooth dies and reaches the putrescent state, the canals and intertubular spaces are filled with fluid exudates that are thrown off from that pulp, and the whole tooth thereby becomes infected. Our aim should be to free the tooth of these poisonous exudates previous to medication. In doing so we can treat by direct medication the tooth structure, canals and intertubular spaces, where microorganisms find their habitat. Otherwise treated, it is as unscientific as it would be for a surgeon to dress a wound without previously sponging the diseased part to remove all foreign substances. In the latter case, as in the former, the direct action of the medicine would be attained, and necessarily a more rapid restoration to health of the parts afflicted. To attain the best results, then, we will have to rely upon heat to aid us in the treatment of this class of teeth referred to. Heat can be used in the following manner: After applying the dam, and removing all vestige of the putrescent pulp, we can follow with the root-canal drier. Upon its introduction into the pulp-canal a hissing sound will be heard, proving the presence of moisture. This process must be repeated until the hissing ceases. The tooth is then thoroughly desiccated and ready for direct medication. Proceeding further, we introduce our antiseptic dressing into the pulp-canal, and by capillary attraction the medicine is carried into the intertubular spaces.

The tooth then receives the benefit of direct medication, thereby saving time otherwise used in continuous treatments.

Another important point gained is, that heat not only desiccates the pulp-canal but is an active agent and aid to antiseptic medicine by way of lessening the virulence of pathogenic germs. Let me digress a few moments: Heat has always been a purifier, and its application as a germ destroyer has played so important a part in many directions that the attention of scientists has been called to this agent. It has been said that the action of cold, although it does not destroy, yet arrests the development of microorganisms. In the preservation of food cold will preserve it for a long time in a good state. Heat, on the contrary, destroys microorganisms. So much value has been placed upon this agent as a germ destroyer that among those to give it a due consideration were the members representing the council of public hygiene of France. They studied the question of the antiseptic action of heat, a report of which was given by Grancher and Gariel, and they reported unqualifiedly in favor of steam heat under pressure as a powerful agent to destroy pathogenic germs. Steam under pressure is the most efficacious between 112° C. and 115° C., because it destroys germs most resistant after fifteen minutes. Hot air and overheated steam are considered of less value. Even raised to 130° certain germs are not affected though the heat be prolonged to thirty minutes. In summing up the experiments made by the commission, they found the most efficient disinfectant was moist heat raised to the temperature of 110° to 115°; but it is not applicable to all circumstances.

In connection with the above subject let us briefly consider some bacteriological experiments with heat. Dr. Cook's experiments upon seventeen teeth report unqualifiedly in favor of direct medication. To use Dr. Cook's own words: "The first consisted of taking two freshly extracted teeth, preparing them as for filling—one I dehydrated with a root-drier—and placing in each tooth three drops of Dr. Black's 1-2-3. I then made cultures of anthrax bacilli, plating them out in the usual way. The desiccated was placed in Plate No. 1; the one that had not been dried was placed in Plate No. 2. On Plate No. 1 no colonies appeared, except at the edge of plate, and they soon died out. On Plate No. 2 I was able to make only a few cultures. On Plate No. 3 there was a luxuriant development. Another experiment I made in the same

way, only using formaldehyde as a disinfectant. I found in the tooth that had been desiccated and placed in plate No. 1 there was no development, while on Plate No. 2 there were scattered a few colonies, but I could not transplant. I carried these experiments on, numbering about seventeen in all, using the various antiseptics that can be used in the mouth."

Dr. Cook further says: "There is no question in my mind that desiccation facilitates very materially the disinfection of the teeth. In fact I am inclined to believe that a tooth can be thoroughly disinfected with the root-canal drier without antiseptics at all, but as yet I have not experimented sufficiently to say definitely in regard to it. I found when a tooth had been dried or disinfected as well as possible with the heated broach, if a culture of the various mouth bacteria were put in it, that as soon as the culture media in which they were had been used up they became very much attenuated."

There is no other way than by such experiments cited to prove that heat plays an important part in the destruction of microorganisms, and also the desiccation of pulp-canals previous to being filled.

There are many, I am well aware, who still use cotton and other absorbents to desiccate pulp-canals. There are also some who dehydrate these canals by what they term "substitution"—that is, trying to displace the moisture by winding cotton around a broach, saturating the cotton thus wound with antiseptic oils, and passing this broach up and down into the canal, hoping to remove the moisture by displacement. This I think is misleading, uncertain and an unreliable method of desiccation. A word as regards that ancient method of filling pulp-canals with shreds of cotton. It is claimed by those who practice in this manner they meet with success. To my mind this method is unscientific; for to be absolutely certain of the best results these canals must be sealed up solidly, filled to their entire length, and the apical foramen closed as well, preventing the egress of any microorganisms that might otherwise find their habitat there.—*Dental Review, March 1898.*

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NEW PLASTIC OPERATION FOR THE RELIEF OF DEFORMITY DUE TO DOUBLE HARELIP. By Robert Abbe, M. D., New York. A lad of twenty-one years recently presented himself for a conspicuous deformity of the lips, the sequel of an operation for double harelip in infancy, consisting in an extreme flat-

ness and scantiness of the upper lip, with an enormous pouting and redundance of the lower one. He also had a complete cleft of the hard and soft palates, upon which two attempts had been made in former years to close. He desired this to be closed first, which I did, and operation was afterward done upon the lips.

Their inequality was admirably corrected by transplanting the middle portion of the lower lip into the upper, as illustrated in Figs. 1, 2 and 3. A median vertical incision was made in the upper lip, and the central scar portion excised so as to obtain edges of an excellent quality of skin. The gap thus created was about three-fourths of an inch in width. A flap taken from the central portion of the lower lip, a little wider than the upper gap, was then made, in such a way as to make a hinge upon one side containing the lower branch of the coronary artery on the left, which flap was turned upward so

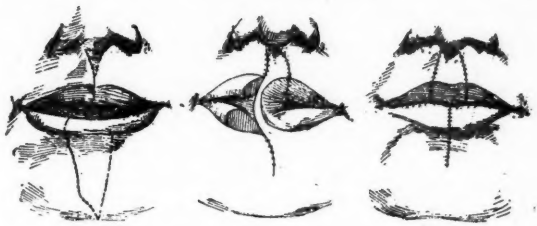

Fig. 1 *Fig. 2* *Fig. 3*

that its lower edge on the chin was placed beneath the columna nasi. The vermilion border was exactly stitched on one side, as shown (Fig. 2), and numerous very fine stitches were applied so as to secure apposition around three-fourths of the flap. The lower part of the wound upon the chin was also brought in apposition up to the red portion.

Upon the right side of the mouth the upper half and the lower half of the red lip were left free until the inverted flap should have grown in its new position. Retention sutures were made to transfix the upper lip from side to side, and also one was passed from below the left angle of the mouth, crossing obliquely to the right upper lip, below the wing of the nose, thus preventing unconscious dragging upon the flaps. These are not shown in the sketch.

On the twelfth day, the flap having grown perfectly in its new position, its base was very carefully cut from the lower lip so as to

leave an ample portion of the red middle lip, which was turned upward and exactly fitted to the freshened edge of the free half of the lip, as shown in Fig. 3. The lower lip was then refreshed and sutured.

The nutrition of this transplanted flap by its new capillary nourishment was so perfect that in color and texture it seemed to have been always a part of the upper lip. The lines of suture rapidly faded and were quite insignificant. The two lips were afterward in about their normal proportion, and gave patient perfect satisfaction.

During the twelve days between the operations nourishment was well sustained by fluid taken through a tube inserted through the nostril.—*Medical Record, April 2, 1898.*

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CONNECTION BETWEEN DISEASES OF THE EYE AND DISEASES OF THE TEETH. By Charles Stedman Bull, A.M., M.D., New York. Read before New York Institute of Stomatology, Jan. 4, 1898. The relation which is supposed to exist between affections of the teeth and diseases of the eye has been familiar to us all for many years, and the belief in its existence is almost as old as the science of medicine itself. The difficulty has always been to explain exactly what this connection is, and how the diseased process is propagated from the mouth to the eye, or, in the reverse direction, from the eyes to the mouth.

Attempts have been made to classify the lesions of the eye which are supposed to be of dental origin by dividing them into two classes, viz., those lesions which are of reflex origin and those which are of an inflammatory nature. All such attempts, however, have been generally too vague and too positive, too schematic; for a reflex lesion may later become an inflammatory lesion, and must thus come to be regarded as the irritative phase of an inflammatory phenomenon. In these latter days of what may be called the "microbic craze" we are, perhaps, too prone to consider the so-called reflex lesions as more likely to be of microbic origin, thus restricting the reflex ocular phenomena within still narrower limits. Attempts have been made in the past by the advocates of the reflex theory to regard all lesions of the anterior segment of the eyeball, in cases of dental disease, as due to some disturbance of the trifacial nerve; while lesions of the posterior part of the eyeball are considered to be of an inflammatory, infectious nature, propagated directly from the

diseased teeth or upper jaw to the orbit, and thence to the eyeball. This is a fanciful classification which is not justified by our clinical or pathological knowledge.

It is probable that lachrymation, due to irritation of the terminal filaments of the trifacial nerve, is of reflex origin, as may be also amblyopia with peripheral narrowing of the visual field. In the latter case, however, it is possible that the irritation may be propagated by inflammation along the optic canal, where the optic nerve may be compressed or inflamed by the septic elements of inflammation, infected, and thus give rise to defects of vision and a narrowing of the visual field. It is very possible that a dental lesion causing a sensitive impression in the trifacial may reach the great sympathetic nerve, or the ciliospinal centre, or even the bulbar enlargement of the cord, and give the impulse to a greater or less number of neurons, according to the degree of impressionability of the subject or for other reasons. Any or all of these reasons would suffice for the retention of the sensitive impressions in several nuclei and the production of varying motor or vasomotor phenomena.

Congestive phenomena of reflex origin, by means of irritation of the filaments of the trifacial, are said to cause dilatation of the vessels of the eyeball, and even to set up keratitis and iritis. This, however, is by no means certain, and is more than doubtful. It would seem more rational to believe, for example, in a case of empyema of the maxillary antrum due to dental caries, followed by iritis, that an infectious osteoperiostitis had ensued, with metastasis of the pus through the medium of the blood-vessels and lymphatics, to the tissue of the iris and choroid. This method of propagation has not yet been proved to occur, but it is highly probable. It is not yet positively known that infectious microbes coming from a suppurating focus must always set up the same suppurative inflammation in a new tissue when carried there by the vessels and lymphatics. Cases of iritis occurring in the course of abscess of the maxillary antrum with dental caries are probably of pure microbic origin. Mere conditions of irritation and congestion of the eye may be the starting point of a microbic infection.

We know that infection of dental origin may extend to the sinuses of the face, not only the antrum but the frontal sinus, ethmoid sinus, or sphenoid antrum, by the natural opening into each of these sinuses. Infectious inflammation of the maxillary antrum,

consecutive to an alveolar dental periostitis, frequently extends to the orbit, and these cases of cellulitis of the orbit are due in most instances to periostitis of the floor of the orbit extending from the antrum. The pus may extend to the orbit by stripping the periosteum from below upward, or more frequently through the medium of the communicating veins. The veins of the maxillary sinus and of the periosteum of the upper jaw open generally into the ophthalmo-facial vein, which, coming from the pituitary membrane, passes through the sphenopalatine foramen, anastomoses with the intraorbital veins, and empties into the facial vein below the level of the malar bone. Inflammation of this vein from microbric origin might of itself cause a thrombophlebitis of the cavernous sinus. The inflammatory process might also follow the course of the lymphatics. Thus alveolar dental periostitis may cause thrombophlebitis of the cavernous sinus and secondary orbital phlebitis, not only when starting in the superior maxilla but also when confined to the inferior maxilla.

An interesting fact has been brought out by Reynier and Parinaud. They have proved that in certain cases of orbital cellulitis from alveolar dental periostitis and abscess of the antrum the pus does not reach the orbit by stripping up the periosteum, for there is no periosteum. The pus spreads through the bone itself. Pus starting in an alveolus may perforate it; but on the other hand, it may not destroy the alveolar wall, but pass through the canaliculi or foramina at the apex of the alveolus, and thence into the infra-orbital notch, or through one of several orifices situated in front of the lachrymal sac, in the ascending ramus of the superior maxilla. These orifices often communicate directly with the nasal fossæ or antrum, so that the pus coming from a carious alveolus may reach the orbit either by passing through the sinus or by avoiding it.

In children the maxillary sinus is much smaller than in the adult and does not bear the same relations to the orbit. It is effaced in part by the development of the alveoli of the first and second dentition. The relation of these alveoli vary with the age of the subject; but in some cases the alveolus of second dentition may extend as far as the orbital arch. In the case of the cuspid tooth, the alveoli of the first and second dentition, more or less exactly superimposed, the one on the other, often communicate with each other by an orifice, which gives passage to both nerves and vessels,

and later, by the absorption of the wall of separation, the one resulting alveolus ascends as far as the orbit. In both children and adults the infectious focus may remain localized, or it may spread by various channels more or less rapidly and gain progressively the sinuses of the face and base of the skull through the veins of the optic foramen or vault of the orbit.

It would seem wiser to give up any attempt to classify the ophthalmic lesions met with in connection with morbid processes in the teeth and to consider the subject under two heads. First, lesions of the eye met with in the course of dentition, both primary or early and secondary. The connection existing between certain affections of the eye and early dentition is very close and is recognized by all practicing physicians. Some of the ocular manifestations met with in the course of early eruption of the first teeth are sympathetic in nature and probably reflex in origin, such as photophobia and lachrymation. Others are of a distinctly inflammatory nature, though also reflex in origin, such as the various forms of ulceration of the cornea and conjunctiva. Catarrhal conjunctivitis, phlyctenular conjunctivitis and keratitis, ulcers of the cornea, lagophthalmos from spasm of the levator of the upper lid, marginal blepharitis, mydriasis, and a peculiar form of cataract are affections of the eyes not infrequently met with during early dentition. Many authors have cited such instances. A case reported by Sous is interesting. A child was attacked by diffuse keratitis of the right eye and a cure followed lancing of the gums. In the following year the left eye became inflamed in the same way, and the process involved not only the cornea but the sclera also. A tooth was removed to allow a deviated tooth to take its normal position, and in three days the cornea had resumed its normal transparency and all signs of inflammation vanished. All these so-called superficial inflammations of the eye are generally considered to be reflex, and are relieved and generally cured by incisions in the swollen gums. I have under my care at present a child, aged ten months, in excellent physical condition, with good digestion, who for nearly three months has had a series of phlyctenular ulcerations on the margin of the cornea in both eyes, appearing in groups, and accompanied by great photophobia and considerable general conjunctivitis, and very pronounced swelling and engorgement of the gums. Local treatment has proved of little use, but on every occasion after lanc-

ing of the gums there has been an immediate improvement in the photophobia and the ulcers began to heal. The teeth have pushed themselves forward very rapidly, and with each new attack of swelling of the gums a fresh crop of small ulcers have appeared on the margin of the cornea.

One of the most interesting ocular lesions met with in connection with difficult early dentition is the zonular cataract. Horner was one of the first to call attention to this, in 1864, and he supposed it to be due to the influence of infantile rickets. Arlt first noticed the coincidence of infantile convulsions and zonular cataract, and thought that in the convulsions met with during dentition some solution of due physiological contact took place between the denser central portion and the more fluid peripherical portion of the lens, and that this mechanical lesion manifested itself as a stationary zonular or lamellar opacity. Horner noticed that these patients showed cranial deformities and malformation of the first teeth, which he attributed to rickets. Out of sixty-five cases of zonular cataract, forty-eight had infantile convulsions, and in thirty-six cases there were dental and cranial deformities. The teeth are thick and coarse, the incisors are cubical, and the enamel terminates abruptly on the neck of the tooth in a swollen ridge. The horizontal furrows in the enamel become visible to the naked eye, and near the cutting edge a horizontal row of round holes marks the position of one of these excavated grooves. The body of the tooth terminates in a convex border at the cutting edge. Sometimes the enamel is wanting in the grooves and the discolored dentin shows through. Story, in 1886, reported nine cases. He does not believe that rickets is always the cause. The dental defect is due to an arrest of development. The period of the growth of the enamel is of limited duration, somewhere between the sixth and the ninth month. He thinks that there is a close similarity between the lens and the dental enamel in origin and development, and that it is, therefore, natural that they should be affected by the same pathological agents. Both are formed by an involution of the epithelium from the surface of the embryo, and in both the growth proceeds from the deeper layer of this epithelium, when separated from the rest of the epiblast by the interposition of a mesoblastic layer. There is this difference, however: the enamel organ has only a brief functional existence and then disappears, but growth of lens proceeds during many years.

Hutchinson stated, in 1875, that these imperfect teeth were, as a rule, met with only in connection with the zonular cataract of early childhood. The latter was always symmetrical and quite stationary, and was not associated with any particular diathesis. The defective development of the teeth was seen in the incisors, cuspids and first molars, the latter being the test-teeth. The bicuspids usually escape. In contradistinction to Story and Horner, he believes that the permanent teeth are alone affected. The incisors and cuspids are pitted, dirty, and rough, with spinous edges. The non-development of the enamel and the erosion of the exposed dentin are the essential features. With these teeth and the zonular cataract there is usually a history of infantile convulsions. Some have held that these dental defects usually result from inflammation of the gums in infancy, and that mercury is the chief cause, the mercury having been administered during the period when the enamel was undergoing calcification. Hutchinson believes that the connection between zonular cataract and convulsions is universal. Weiss (1876) holds the same views. The general testimony seems to be in favor of the view that when zonular cataract is found with a history of convulsions, the permanent teeth will certainly be malformed. The distinct characteristic of a genuine "convulsion tooth," unaffected by congenital syphilis, is the shortness of its enamel, dentin projecting beyond enamel edge and being more or less honeycombed.

Second. Lesions of the eye occurring in the course of diseased processes in the permanent teeth. The reflex theory has many strong advocates, one of the most recent being Knies (1895), and from the time of Mackenzie, in 1833, down to the present day most writers on ophthalmic diseases have given more or less adhesion to the doctrine. It is only when we reach the period of bacteriological investigations that the reflex theory of origin begins materially to lose ground. Leber reports (1877) numerous observations of the occurrence of visual disturbance through irritation of the extraocular branches of the trigeminous in diseases of the teeth, such as simple dental caries with severe continuous toothache and sensitiveness of the tooth to pressure, or suppuration in the alveoli with prolongation of the inflammation to the antrum. The teeth involved are generally in the upper jaw, and usually the molars. The eye symptoms are photophobia, retinal hyperosthesia, photopsia, loss of accommodation, and, more rarely, amblyopia and amaurosis. All these symp-

toms simulate sympathetic troubles. The ophthalmoscopic evidence may be negative, though occasionally there are signs of retinitis and optic neuritis. * * * Desmarres (1858) believed that there was a real pathological connection between diseases of the eye and diseases of the teeth, and that the connection might be either direct by continuity of tissue or reflex through the nervous system. The lesions on the side of the eye might be either organic or functional. * * * Nuel (1887) is even more positive in his statements. Generally the superior dental nerves are involved. If amblyopia is really present one or more molars in the upper jaw will be found sensitive. If the superior dental nerves are involved there will always be conjunctival and ciliary injection, with ciliary neuralgia, lachrymation, photophobia, and sometimes blepharospasm and spasm of accommodation. Nuel considers these symptoms all reflex; reflex vasomotor dilatation in the conjunctival and ciliary vessels, reflex contraction of the muscles of the face, and reflex innervation of the lachrymal gland. If amblyopia exist, there is usually also narrowing of the visual field, and the vision becomes worse with each fresh attack of dental neuralgia. * * * Galezowski (1872) is an advocate of the reflex theory, but believes that the reflex influence is exerted not in the brain but in the ganglion or node of Gasse, and works in both ways, from the teeth to the eyes and *vice versa*.

Without quoting the names or opinions of the long list of authors who have expressed their views on the subject, it seems to be definitely settled that a relation exists between certain lesions of the eye and certain diseased conditions of the teeth. Knies formulates the modern views as follows: (1) Conjunctivitis of the phlyctenular variety is known to be intimately connected with teething, even with the second dentition. (2) It is undoubtedly true that keratitis, iritis, glaucoma, muscular paralysis, asthenopia, amblyopia without visible lesion, supraorbital neuralgia, and oxophthalmos with and without orbital cellulitis, are caused directly or indirectly by carious teeth. (3) When paralysis of accommodation appears during an attack of toothache it probably results simply from the lack of vigorous innervation on account of the distressing pain. (4) Muscular insufficiency or paralysis, with diplopia, may also be explained as paresis due to enfeebled innervation. (5) Spasm of accommodation and nictitation are both reflex symptoms frequently observed with toothache, as is also neuralgia of one or more of the branches of the trifacial nerve.

(6) Amblyopia and amaurosis are by no means infrequent complications of carious teeth. Any positive ophthalmoscopic evidence should lead us to assume a common cause for the dental pain and the visual disturbance. (7) A spasm of the levator muscle of the upper lid leading to the appearance known as lagophthalmos has not infrequently been described in connection with pain in carious teeth. (8) Orbital cellulitis with development of abscess in the lower lid has been noted in caries of the teeth of the upper jaw with the development of abscesses round the diseased teeth. (9) Exophthalmos, or protrusion of the eye, may be caused by serious infiltration of the orbital tissue directly connected with disease of the alveoli. (10) Conversely, pain in the teeth of the upper jaw is by no means an infrequent symptom in iritis and cyclitis with severe neuralgic pain in the branches of the trifacial nerve; and toothache has been unmistakably recognized as one of the prodromal signs of glaucoma.

For the sake of convenience we may perhaps divide the lesions of the eye met with in connection with lesions of the teeth into three groups, as follows: (1) Those dependent on vasomotor disturbances, which would include all cases of disturbance of nutrition, all inflammatory cases, and the reflex cases, such as amblyopia and amaurosis without ophthalmoscopic evidence. (2) Those dependent on disturbances of sensibility, such as ciliary neuralgia and the various forms of asthenopia. (3) Those characterized by disturbances of motility, including all cases of spasm and paralysis of the muscles of the eye, including the iris and ciliary muscle.

The eye complications of dental disease are of varied nature. Beginning with the most superficial structures of the eye, the first subject that will engage our attention is the *eyelids*. Herpetic eruption of the lids in the course of the terminal branches of the fifth nerve is often met with in connection with carious teeth, and resists all treatment until the teeth are extracted or properly filled. Hutchinson has reported an interesting case of constant spasmodic contraction of the levator of the lid in a lady who had four decayed molar teeth in both jaws on the corresponding side. These were removed and all ciliary neuralgia at once ceased, but the spasm remained. The left upper first molar contained an amalgam stopping, which on being removed revealed an exposure of the pulp. This tooth was also removed and improvement in the muscular spasm began at once and the spasm shortly stopped altogether.

This may be regarded as purely reflex. On the other hand, Redard has reported a case of paralysis of the levator of the lid which resisted all treatment. A careful examination of the mouth showed extensive caries of the upper third molar, and on this being removed the paralysis began to improve, and in a few days the lid had completely regained its power. Ely has reported a case of paresis of the orbicularis muscle associated with spasms of the ciliary muscle in a patient with an abscess at the root of the third upper molar on the right side. This tooth was extracted and the ocular symptoms immediately disappeared.

When we come to consider the lesions of *cornea* and *sclera*, the number of cases reported in connection with diseased teeth is almost numberless. Ulcers of the cornea, superficial and interstitial keratitis, and scleritis are repeatedly mentioned. Marginal phlyctenular keratitis is a very common accompaniment of early and second dentition as well as of carious teeth in the adult. Ely reports a typical case in a man aged 35, who had severe neuralgia of the right side of the face, with ulcer of the conjunctiva and scleritis of the right eye. There was in the right upper cuspid tooth an ulcerated spot just below the gum and the pulp was exposed. The pulp was destroyed, the ulcerated spot treated, and the neuralgia ceased at once, and in a few days the eye became perfectly well. Hern has also reported a number of cases of scleritis of undoubted dental origin. *Iritis* has also been observed in connection with interstitial keratitis in cases of carious teeth, and the teeth being properly cared for the iritis promptly got well.

The *loss* of *accommodation* due to *paralysis* of the *ciliary muscle* has received special attention from several authors.

Schmidt-Rimpler (1877) gives the result of his experience in ninety-two cases and draws the following conclusions: (1) In consequence of the pathological irritation of the dental branches of the trifacial nerve there may result more or less marked limitation of the range of accommodation. (2) These limitations of accommodation may be either unilateral or bilateral. When unilateral they always appear in the eye on the affected side. (3) These limitations of accommodation occur most frequently in the young, while at an advanced age they occur rarely or never. (4) They are due to an intraocular increase of tension, proceeding from a reflex irritation of the vasomotor nerves.

In seventy-three of the ninety-two cases reported the accommodation was diminished far below the normal standard. In most of the cases the accommodation was regained after the removal of the trouble in the teeth either by the cure of the carious process or by the extraction of the diseased teeth. The degree of limitation of the accommodation varied greatly. Schmidt-Rimpler believes that the irritation of the branches of the trigeminus due to carious teeth causes in a reflex manner an irritation of the vasomotor nerves of the eye and that irritation of these vasomotor nerves produces an increase of the intraocular tension, which diminishes the accommodation. * * * Ely (1882) reports in detail the case of a man aged 31, who had not only paralysis of accommodation in the right eye, but also paralysis of the right internal rectus muscle. The root of the first upper molar tooth on the right side was denuded, rough and sensitive. The pulp of the tooth was dead, the alveolar process was absorbed, and there was extensive suppuration in the adjacent parts. The condition of the tooth was rectified and the symptoms all disappeared. * * * Dunn (1891) reports a case of paralysis of accommodation, with impaired vision and severe ciliary neuralgia in a patient, who was found to have an abscess at the root of the second molar tooth in the lower jaw on the left side. The tooth was extracted and the alveolar cavity antiseptically treated, and in a few days all the ocular symptoms entirely disappeared.

When we come to consider the subject of amblyopia and amaurosis, whether reflex or not, in connection with the existence of carious teeth or lesions in the jaw, the list of authors becomes very large. Hocken, in 1842, published a treatise on amaurosis, in which a number of cases are reported as due to carious teeth. Most of the cases reported have been associated with dental neuralgia of the molars of the upper jaw, and the lesion has been caries, sometimes complicated by abscesses of greater or less extent at the roots of the teeth. It should be understood that all cases of amblyopia or amaurosis considered under this head have been those in which no ophthalmoscopic evidence of disease has ever been noticed from the beginning to the end of the trouble. There is usually lachrymation, photophobia, conjunctival or ciliary injection, and occasionally spasm of accommodation, but the fundus remains healthy. The defect of vision may be unilateral or bilateral, and when the latter exists the vision is always worse on the side corresponding to the diseased

teeth. If the defect in vision is marked, the field of vision is usually concentrically narrowed, and both vision and limitation of the field of vision become worse with each exacerbation of the neuralgia. The photophobia in these cases is due to the existing retinal hyperesthesia. * * * Park (1893) has reported a case of a patient who complained of headache, loss of vision in the right eye, and some photopsic manifestations. A few days later vision in the right eye was reduced to perception of light. The ophthalmoscopic examination was negative. There was concentric narrowing of the field of vision. An examination of the mouth revealed five decayed teeth in the right upper jaw, and an artificial plate was found resting and pressing on the decayed roots. The roots were all extracted, and vision began to improve at once and in two months was completely restored. * * * In the *Courier Medical* for 1890 will be found the report of a case of a lady, aged thirty, who complained of failing vision in the left eye, accompanied by severe toothache in the second left upper molar tooth. In one week from the onset of the attack the left eye became entirely blind, without any ophthalmoscopic evidence of disease. The diseased tooth was extracted, and pus immediately flowed from the alveolar cavity. Examination revealed a small piece of wooden toothpick, which was removed from the cavity, and in a few days there was complete restoration of vision. * * * I have recently had under my care a lady who presented herself complaining of lachrymation, photophobia, and loss of accommodation in the right eye. In two days vision in this eye began to fail and the field of vision became concentrically narrowed. Repeated ophthalmoscopic examinations revealed nothing abnormal. In about a week from the onset severe neuralgia of the right side of the face set in. She was sent to her dentist, who discovered that the second molar in the right upper jaw, which had been filled, was very sensitive to pressure. The filling was removed and the pulp found inflamed. At this time the vision had been reduced to perception of light. The pulp was destroyed and the cavity was again filled. The neuralgia, lachrymation, and photophobia ceased at once, and in less than a week vision was completely restored, and the field of vision regained its normal extent.

Proceeding next in the course adopted, from without inward, from the superficial affections of the eye to the deeper and more serious lesions, in connection with diseased processes in the teeth, we

come to consider *inflammation of the optic nerve*, or *optic neuritis*, including the immediately surrounding zone of the retina. Of this disease we have a number of undoubted cases on record. In 1893, Hermann reported a case of inflammation of the optic nerve of the variety known as papillitis, occurring in a patient in whom no cause for the lesion could be found until the teeth were examined, when a carious tooth was found accompanied by toothache. Unfortunately, the extraction of the tooth and the cure of the suppurative process had no beneficial effect upon the inflammatory process in the optic nerve. * * * Despagnet (1893) reports a very clear and interesting case occurring in a woman, aged twenty-four, in whom there was optic neuritis with dilatation of the iris. An examination of the mouth showed caries of the last molar of the upper jaw on the corresponding side, with extensive periostitis of the alveolar process and a sequestrum of the alveolar arch. There was suppurative inflammation in the antrum directly connected with the diseased alveolus, and the suppurative process was found to have extended to the orbit as far back as the foramen opticum and here had involved the optic nerve. * * * Hirsch (1893) reports a case of optic neuritis ending in atrophy of the nerve and blindness, in which the disease evidently started in the left second upper molar. There was an extensive abscess involving the gum, cheek, and lower lid, which had perforated externally. A probe could be passed from the external opening in the cheek along the floor and inner wall of the orbit. The infection had extended from the tooth-cavity and set up alveolar periostitis, which had involved the antrum and floor of the orbit, and set up orbital cellulitis, inflammation, and eventually atrophy of the optic nerve. * * * Feuer (1895) reports two cases of optic neuritis ending in a complete cure and restoration of vision after extraction of the carious teeth. In the first case there were three decayed teeth with osteoperiostitis of the alveolar arch and antrum, with exophthalmos and optic neuritis. In the second case the third molar in the right upper jaw was diseased, with periostitis of the alveolar arch and of the floor and inner wall of the orbit. The loss of sight was complete in the right eye, and coincided with the occurrence of inflammation and pain in the orbital floor. The vision was completely restored in three months. Cases of this sort might be multiplied almost indefinitely, but enough have been presented to show the connection which actually exists between diseased teeth and the inflammation of the optic nerve.

Choroiditis, or inflammation of the choroid coat of the eye, has been mentioned by a number of authors as occasionally due to reflex irritation from a decayed tooth, and several cases have been reported, one of the most notable by Sous (1896). The patient was a girl, aged twenty, who complained of failing vision in the right eye. An examination showed both keratitis punctata and choroiditis. The first right upper molar was carious and had been recently filled, but was still painful. Pressure on this tooth caused an acute pain in the eye. The filling was removed and vision began at once to improve, the keratitis rapidly disappeared, and within a week the choroiditis was gone. The tooth was then refilled, and on the next day there was a return of all the symptoms. The filling was again removed, and the symptoms again rapidly disappeared. Here the irritation of a dental nerve acted in a reflex manner upon the sensory ophthalmic nerves and set up a secretory choroiditis.

Anomalies of the ocular muscles in connection with dental lesions have been repeatedly reported and I have seen several such cases. Terrier (1876) has reported a very obstinate case of spasmodic contraction of the motor muscles of an eye and of the orbicularis muscle of the eyelids, which was entirely relieved by extraction of the carious teeth. * * * Hutchinson (1895) reports a case of lagophthalmos due to dental irritation. The patient, a lady, suffered from marked spasm of the left upper eyelid. The left second and third molars in both jaws were badly decayed, and there was intense left facial neuralgia in all the branches of the fifth nerve. All four teeth were extracted, and the neuralgia ceased at once, but the spasm of the lids continued. The left first upper molar had an amalgam stopping; this was removed and the pulp found exposed. This tooth was removed, and an improvement in the muscular spasm of the lids began at once and in six months it was entirely cured. * * * Ely (1882) reports a case of a woman, aged forty, who had marked paralysis of the right third nerve or oculomotorius. Several decayed teeth were found in the right upper jaw, and the gums were badly swollen. The teeth were extracted, the alveolar cavities and gums were treated antiseptically, and the symptoms of muscular paralysis all disappeared.

The subject of periostitis of the bones of the orbit, as a consequence of periostitis of the alveolar arch due to decayed teeth, is so intimately connected with orbital cellulitis that the two will be con-

sidered together. These constitute some of the most serious cases, not only as regards danger to the integrity of the eye, but also to the life of the patient, whichever fall under the observation of the oculist. Many writers have reported cases. Schwendt published an inaugural dissertation on orbital cellulitis in 1882, in which he collected the reports of forty-four cases, of which seven were directly due to carious teeth. The cellulitis was generally preceded by abscess of the antrum, periostitis of the floor of the orbit, and sometimes by suppuration in the ethmoid, with discharge of pus from the nose. * * * Vossius in 1884 reported a case of orbital cellulitis with thrombophlebitis of the orbital veins and optic neuritis, with complete restoration of vision after extraction of a carious molar. This case was probably due to a rapid infectious inflammation of the veins and lymphatics with thrombosis, through the alveolar veins into the antrum and thence by a branch which perforates the floor of the orbit and empties into the infraorbital vein. * * * Snell in 1890 reported the case of a young girl aged 14, who had two decayed teeth in the upper jaw, which were extracted and periostitis found in the alveolar arch. Acute orbital cellulitis followed, and the orbital tissue was freely incised, giving exit to a large quantity of pus, but death followed in a few days from meningitis. * * * Fage (1893) reports the case of a man aged 29, who applied for treatment. There was protrusion of the left eye with marked chemosis, œdematous lids, dilated iris, and the cheek swollen and painful. There was fever and a fetid odor to the breath. The gums of the left upper and lower jaws were swollen and there were several carious teeth. The first left upper molar was wanting, having been removed a few days before on account of severe toothache. The symptoms became rapidly worse and the orbital tissue was freely incised, but no pus appeared. An incision in the lower lid gave exit to fetid pus. A probe passed freely through the alveolar cavity of the first molar into the antrum, and pus flowed from the latter. This treatment, with antiseptic irrigation, brought a rapid recovery. * * * Galezowski reports a somewhat similar case, occurring in a young woman aged 20. He comments on the frequency of alveolar abscess due to carious teeth, he having seen nine cases in two years among 17,000 cases of eye-disease.

There seems to be no doubt that in addition to the rather benign reflex disturbances in the eye accompanying more or less serious dis-

ease in the teeth and jaws, we also not infrequently meet with grave ocular lesions due to an infectious process, and here our anatomical knowledge enables us to follow the channel of propagation accurately. I think it may be stated that the primary evil starts in the periosteum around a carious alveolus, develops at first slowly, and if recognized and properly treated it may be cured without an abscess. If, however, the alveolar dental periostitis extends to the antrum, the next step will be an abscess of the antrum, periostitis of its walls, including the root of the antrum or floor of the orbit, which, in its turn, sets up orbital cellulitis, ending in suppuration, with possible destruction of the eyeball from panophthalmitis, or inflammation of the optic nerve and atrophy from strangulation of the nerve by pressure.

The various steps in the destructive process here outlined are well illustrated in the report of a single case published by Juler in 1895. A boy complained of pain in one of the upper molar teeth, and this toothache was followed by pain in the jaw, then by pain in the orbit, exophthalmos, orbital cellulitis and suppurative panophthalmitis and total destruction of the eye. The tooth was extracted and was found extensively diseased, with caries of the alveolar wall, periostitis, abscess at the root of the tooth communicating with an abscess of the antrum. The eye was enucleated and the floor of the orbit was found extensively diseased, with a large hole communicating with the cavity of the antrum.

In this somewhat rapid sketch of a subject of almost equal interest to both dentist and oculist there does not seem to be any reasonable doubt of the close connection which exists between certain diseased processes in the eyes and certain abnormal physiological and pathological conditions of the teeth. The modern ophthalmologist certainly recognizes the existence of this connection, though he perhaps has not insisted upon it sufficiently in the published literature.—*International Dental Journal, March, 1898.*

* * *

USE OF THE DISK. By W. A. Heckard, D.D.S., Indianapolis. The disk-holder or mandrel may oftimes be used more advantageously if the head or screw that holds the disk be dressed down a little. Many times a very small disk is called for in finishing small gold fillings at the "gum line" or on the labial surfaces of the central incisors. A large mandrel head mars the surface of the filling

if it touches it, and it often does when small disks are used. In polishing gold fillings in molars and bicuspids when leather, chamois, moose hide or soft rubber is used to carry the polishing powder, the large mandrel head makes it hard to polish in the fissures. By putting the mandrel in your hand-piece and turning it against a file or stone, it takes but a few minutes to reduce the size of the head to one-fourth the original size. I only use a large headed mandrel when using large disks. "The disk is a very painful thing, and I use mostly strips and work them back and forth slowly." Do you? Oh!—I don't; I use disks almost exclusively, always when it is possible. To obviate the pain, which is caused by nothing else but the heat, I have my assistant throw a continuous blast of cold air on the tooth. The air alone, of course, would hurt as much as the ordinary manner of disking does, but properly applied at the same time, neither it nor the disking gives any pain whatever. To get cold air you can use a continuous flow Richmond spray, a blow-pipe bellows, or a compressed air apparatus such as is used by the nose and throat specialists. Some of the modern buildings in large cities furnish compressed air, which makes it very convenient for dental work.

In putting on the final polish I use a rouge-coated paper disk. This polishes a filling smoother and better than anything that has yet been brought to my notice.—*Ind. Dent. Jour., March, 1898.*

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COAGULATION THEORY. By H. T. Smith, D.D.S., Cincinnati. Read before Ohio State Dental Society, Dec. 1897. Not long since I came across the following statement in the editorial pages of the *International Dental Journal.* It is headed "The Coagulation Theory" and reads: "The discussion on this subject, which has taken a wide range and claimed the interest of many minds for years, seems to be drawing to a conclusion, if the very thorough experiments of Dr. E. L. York are to be accepted. These clearly prove that a coagulant such as carbolic acid does diffuse through dentin, notwithstanding assertions made to the contrary; and does not form an impenetrable coagulum at the orificial ends of the dentinal tubuli. These investigations substantiate those previously made, and, conjoined by those made by Dr. Bethel with silver nitrate, form a series of facts that clearly settle the question."

I thought it might be interesting to look up the points at issue and to forecast if possible the conclusion spoken of and at the same

time call attention to some points in the therapeutics of root-canal treatment as they occur. The question originally at issue in the coagulation theory was whether or not a medicament which has coagulating properties, if used in the treatment of root-canals, so seals the mouths of the dentinal tubes as to prevent the further ingress of itself or of another medicament afterward used for antiseptic treatment? In other words, are carbolic acid and zinc chlorid self-limiting in their action, and if so, are they contraindicated in the treatment of root-canals? It involves also this question, which is quite as important: Is the product matter from a putrefactive pulp capable of entering the body of the dentin, and if so, is it also capable of infecting the pericemental tissues, causing what we recognize as lame teeth?

Looking into the first question, the diffusibility of coagulants, Dr. Harlan's experiments were probably the first made and were about as follows: The pulps of freshly-extracted teeth were removed, the ends of the roots sealed, and the teeth planted in plaster of paris. Cotton moistened with carbolic acid in the one case and with wood creosote and zinc chlorid in the others was carefully packed in the root-canals. At the end of forty days tests were made in the plaster of paris for the presence of the coagulant, and none was found. When the essential oils, cloves, cassia, and eucalyptus were used, it was found after four hours that the oils had plainly penetrated the dentin. By adding carmin to the oils the degree of penetration was distinctly followed. When solutions of silver nitrate were used it was found not to penetrate the tubules to any extent, and it was classed as self-limiting with the other coagulants. The silver nitrate furnishes its own stain, and the degree of penetration was easily defined in sections of the roots. In another set of experiments Dr. Harlan immersed the teeth in starch solution up to their anatomical necks, after treating the canals with coagulating disinfectants and iodin. The characteristic blue color did not appear in the starch solution, hence he concluded that the coagulants were a bar to their own diffusibility. We cannot but believe that these experiments were carefully made and the results accurately reported.

The other side of the question is best represented by the recent experiments of Dr. E. L. York upon the diffusibility of coagulants in dentin to which the editorial quoted refers as those that settle

the question. Using a number of teeth with both normal and putrescent pulps, Dr. York prepared them about as Dr. Harlan did. He injected into the canal of one a 95 per cent carbolic acid, which had previously been colored with a small quantity of fuchsia. The tooth was sealed and wrapped in moist gauze and was kept at a temperature of 98° F. to simulate the conditions in the mouth. In about eighteen hours the carbolic acid had passed through the dentin, as shown in sections of the root. This experiment was repeated a number of tlmes, so that no doubt as to the result was left in the experimenter's mind. In other experiments the teeth were suspended in water and the test for carbolic acid made with bromin water, when it was found that the carbolic acid had penetrated the roots in about eighteen hours. Next, in order to demonstrate that carbolic acid does not form an impenetrable coagulum at the orificial end of the dentinal tubuli with their albuminous contents, one of the teeth that had contained carbolic acid in its root-canal for seventy hours was used. The canal was dried and the saturated solution of sodium chlorid was sealed in it. The tooth was suspended in water, and after three hours the water was tested for the presence of the sodium chlorid, using a drop of silver nitrate. The result showed a quantity of silver chlorid thrown down, proving that the coagulum formed was not a barrier to the passage through the dentin of other medicaments used in root-canal treatment. He found also that carbolic acid placed on the white of a boiled egg shows marked diffusibility, from which he infers that carbolic acid is not self-limiting in its action, but penetrates its own coagulum.

Now here are two sets of similar experiments with exactly opposite results. Which are we to believe? Some one says that it is a question of veracity, but it seems to me that the always possible differences in the dryness and age of the teeth used, and the variations in the quantities and percentages of the solutions used, should be given full consideration in the results. Dr. Truman says the question is settled in favor of the diffusibility of coagulants. Hence it is still good practice to use carbolic acid in root-canals. There is, however, one point that the experiments do clearly show, and in this they have perhaps chief value. It is said that the essential oils are very much more diffusible than the coagulants, and for this reason they have a distinct advantage of the latter in certain instances of root-canal treatment; and perhaps the mistake is made when the

question is not allowed to rest with this comparison, but is pushed to the ostracism of one or the other class of medicaments.

A few observations I have put down as they occurred in looking up this question. The first is the statement of Dr. Bethel about the use of silver nitrate. If applied without the use of cataphoresis it is practically self-limiting, and even with the aid of cataphoresis there is little or no danger of forcing the silver nitrate through the whole extent of the dentinal tubules and causing injury to the peridental membrane.

Another observation is the statement that capillary attraction does not come to our aid, as had been supposed, in the rather difficult operation of forcing chloro-percha and medicaments into closed tubes such as are most root-canals. Experiments show that capillary attraction takes place only in minute tubes that are open at both ends; therefore the solubility of chloro-percha in oil of cassia and other of the essential oils is certainly to be taken advantage of by treating the canal, just previous to filling, with one of these oils.

Another observation is the radical statement I found, that the successful treatment of pulpless teeth depends first upon the exclusive use of diffusible disinfectants, and second upon the repeated and continued application of the disinfectant dressing for a considerable length of time. This statement excludes the use of carbolic acid, mercuric chlorid and other antiseptics, and opposes the accepted custom of immediate root-filling, which is certainly good practice in many cases. And, finally, in regard to the future of root-canal treatment, I have only to say that whether or not the advances will be in line of mummifying pastes or chemico-metallic methods, or will remain a process improved along the present lines of practice—that of dragging out each particle of nerve tissue to the end of the root and the end of the hour—it is difficult to say, but it is sincerely to be hoped that the improvements will be effected in the methods as as well as in medicaments.—*Ohio Dental Journal, March, 1898.*

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ITEMS FROM FOREIGN JOURNALS.—Setting Gold Crowns. When putting an all-gold crown over a tooth with live pulp, it is well to open the crown of the tooth with a thin consistency of gutta-percha. This film will not only protect the tooth from thermal changes but will shield the tooth structure from the irritating effects of the acid in the cement.

Arsenic in Dental Operations. Professor D'Argent, of Paris, gives some valuable suggestions regarding the use of arsenic in the devitalization of pulps. He has conducted a very careful investigation concerning the various effects of this powerful poison, and has come to the conclusion that the so-called nerve paste, as now in general use, is injurious to the tooth structure and its surrounding parts. However, when the arsenic is used in combination with drugs which limit its destructive action it then becomes an excellent agent for destroying the pulp. His devitalizing paste consists of

Arsenious acid	5
Eserin	2
Cocain	2

Chloroform q. s. to a paste.

Pastes which contain morphin, creosote or phenol cause great pain to the patient and often leave irritating results, but the paste above recommended gives rapid results and does not subject the patient to any suffering. The eserin (physostigmatic) or alkaloid of the calabar bean acts as a vaso-constrictor, and the cocain aids in bringing about a painless devitalization.

To Brighten Aluminum. To restore aluminum to its original color, wash it in water containing a liberal amount of borax and to this mixture add a small quantity of ammonia.

To Keep Gutta-Percha Fresh. In order to preserve gutta-percha and keep it in a condition ready for filling purposes, it should be immersed in a bottle containing saline water. See that the bottle is well corked and the gutta-percha can be kept for some years.

Impression Material. The following metal will melt when thrown into boiling water. It has a consistency equal to silver and can be used with satisfactory results in crown and bridgework, since it can be poured into impressions taken from modeling compound: Bismuth, five parts; lead, three parts, and zinc, two parts.

Local Anesthetic. The following formula has been used for upwards of three years and has given excellent results, not a single case being reported as showing ill effects:

Cocain	10.0
Glycerin	20.0
Nitroglycerin	5.0
Morph. Sulph	0.5
Atrop. Sulph.	0.5

Aqua dest. q. s. ad 60 grs.

It contains morphin in sufficient quantities to assure safety, this agent acting as a constrictor to the blood vessels. The glycerin assists in retaining the cocain at the point of injection. Nitroglycerin acts favorably on the heart. The atropin sulph. averts the aftereffects.

Ethyl-Chlorid for Anesthesia. A sensitive tooth bathed in ethyl-chlorid will admit drilling or grinding without causing any unpleasantness or pain to the patient. In crown and bridgework this medication will prove very efficacious.

Pain After Extraction. Frequently after extractions a very severe pain remains and innumerable remedies have been recommended as promising immediate relief, but either of the following formulæ will give relief in the most stubborn cases:

Chloroform Alcohol	aa 30.0
Aconite tinct. Morphin	0.4
Alcohol	30.0
Chloroform	60.0
Sulph-ether	22.0
Camphor	15.0
Opium tinct	4.0
Oil cloves	2.0
Menthol	4.0
Chloralhydrate	6.0
Camphor	2.0
Alcohol	30.0

Before using any of the above, it is best to flood the socket with warm water, then bathe wound and socket with the medicine. *Translated by Dr. B. J. Cigrand from Zahnaertliches Wochenblatt and Zahntechnische Reform.*

Code of Ethics.—Do we need a new and revised code of ethics to meet these constantly multiplying exigencies? Probably so. The times are now different from those of the birth of the old code. However, I am inclined to accept the version of that great and good old man, Dr. D. W. Yandell, who used to say to his classes of medical students, when speaking of the code, "Why, gentlemen, what need have we for a code of ethics? A gentleman never needs a code of ethics to govern his actions, and a rascal will never live up to the code."—*The Am. Therapist.*

Letters.

NEW JERSEY LETTER.

To the Editor of The Digest, NEWARK, April 21, 1898.

MR. EDITOR:—This month a number of the members of the Central Dental Association attended the commencement and alumni banquet of the Baltimore College of Dental Surgery. This is an annual affair with some of them. They go down for a few days of rest, and to renew old friendships. On this occasion they had a royal good time, being dined and wined on terrapin and champagne, and enjoyed themselves thoroughly. The Maryland boys know how to entertain, and give themselves up entirely to the game.

The genial member from Elizabeth, a renowned wag, who went down, lost his hat during the festivities and was compelled to return home with a choice spring importation from the city of lovely and beautiful women.

This state is now working under the new law. We have heard that several applications for license from practitioners in other states have been received. They are evidently taking advantage of the clause permitting this, upon certificate from their own state board. Not the least important measure in the law will be the necessity for all so-called "parlors" and "associations" to display in front of their offices a list of all persons doing any work inside, and also the compulsion of a yearly registration.

A few have criticised section 7, as providing too high a penalty—$500, or imprisonment for five years—for any false statement, in a material regard, in connection with an application for examination for license to practice. When the facts are known, however, this appears in a different light. For instance, it has been proven in a number of cases that candidates for license before the board have presented a plate swaged and a rim soldered thereon. They would then proceed to solder the teeth to the same. When completed, the difference between the work done before the examiners, and that brought to them as having been done by the same student at his home, was so manifest that the only conclusion which could be drawn was, that the student had had the work done for him. It was to guard against such things that the clause was inserted.

We have heard that all the New Jersey members of the Protective Association intend to send in their assessments. This most worthy cause should receive the unanimous support of the profession, and the burden should not be allowed to fall upon the few who are willing to place themselves in the breach.

The meeting of the Central Dental Association on the 18th instant was the occasion for a very interesting paper from the pen of Dr. C. Edmund Kells, of New Orleans. His essay on "Combination Fillings of Gold and Amalgam" was full of pith, and gave more information for its length than is usually obtained. It was practical and common sense from start to finish.

Strong efforts are being made by the chairman of the executive committee to secure Professor Trippler, the inventor of liquid air, for a paper for the May meeting.

Dr. Iredell, chairman of the electrical exhibit of the state society, has the hearty cooperation and assistance of Geo. H. Guy, Esq., editor of the *Electrical Engineer*, of New York city. The exhibit will be large and interesting, and will contain all the appliances used in dentistry. Fraternally yours, HORNET.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, April 20, 1898.

The last issue of some of the journals has not only brought the usual amount of interesting and valuable matter, but has furnished us with considerable genuine amusement. The latter applies especially to the letter in the DIGEST from Dr. J. Foster Flagg of "submarine" fame, and to the effusive remarks by the editor of *Items of Interest*. We all know Dr. Flagg and take anything he has to say for what it is worth—never seriously.

The Doctor does not seem to recognize the fact that it is not so much a constituent entering into an alloy which makes it valuable as it is the happy combination, and this can be determined only by long and tedious experiments. This is clearly demonstrated in "Fellowship" alloy.

The editor of *Items*, however, is now occupying a position to demand some attention to what he may say. A great many in the profession, no doubt, know of this gentleman's ability to write "blood-and-thunder stories," and of their success upon the market. He now demonstrates his versatility by appearing as a humorist.

In an editorial (page 304) he attacks the DIGEST for publishing anonymous contributions, which calls to mind the fact that when he published some apparently unjust book reviews, and was written to concerning the same, notably by Dr. Essig, he gave the stereotyped reply, that the work was reviewed by another, failing to say who the anonymous writer was and declining to shoulder the responsibility himself. Now that he has thought best to criticise the fact that you have anonymous correspondents, and as he poses as an authority, we trust he may favor us with the information as to who is responsible for anonymous contributions, whether they be in the bibliographical department or elsewhere, the editor of the journal who allows them to go into print, the publishers or the printers.

A friend called our attention to this same editorial contribution, where he says, in referring to the subject of book reviews: "It is easier to criticise than to do better. This is especially true as applied to critics of literature. Book reviewers who assail the products of all successful writers, wielding a sword for a pen and using blood instead of ink, are not infrequently literary hacks, penny-a-liners," etc. This is quite true and sounds well; it is marred only by the fact, which is best expressed in the words of our friend in commenting upon the above, "consistency, thy name is—well, not *Items of Interest.*" If the editor of *Items* does not conduct his journal along more clearly defined lines, and cease changing his sentiments to suit the occasion, he will shake the confidence of the most optimistic.

We have all been watching intently the controversies which have been waging recently in the editorial pages of the *Cosmos* and the *International.* We are especially interested in this city, as both the editors are Philadelphians. They are both able men, and while the editor of the *International* has as many gray hairs as we have, we would give the editor of the *Cosmos* a hint, by stating that the other gentleman is not to be classed as an old man. He is prematurely gray and perfectly able to keep up his end of the string. There is no danger of his being pushed "into the mire," as suggested by the *American Dental Weekly.* Dr. Truman to-day, no doubt, stands at the head of the class of dental editors, and Philadelphia is proud to call him her own. There is no better evidence of the esteem in which this gentleman is held than by the respectful and thoughtfnl attention given to everything he may say. At the last meeting of

hub, and there are not a few spokes there and round about. Has Dr. Shepard said his last word? He has won a right to rest, if he desires it. Younger men have tried to disturb him, but he is not easily ruffled.

Who will be president of the next World's Dental Congress? Well, that must wait until after Utah. We have seen pictures of the Utah fair buildings. What energy Westerners have. Can Chicago ever be beaten? There is one thing that Chicago has developed—not a fighting parson, but a fighting editor. Good! Stand by him until he is fairly beaten. A clear conscience wins the first battle, and that predicts a moral victory. He has won the "crown" and destroyed all the "bridges." His fight is against illegal claims, and no one can find any fault with such a warfare. It does not follow that a claim is legal simply because one honestly thinks it is. Many have found their supposedly just claims without foundation. This is disappointing, but it must be met in a manly way, like all other of life's disappointments.

In all conflicts men will seek a way out of difficulties. Some think the stomatologists are going to do it, as seen in the April number of the *Cosmos*, but we have some words that will always remain. Some people think prohibition will stop excessive drinking of whisky. Others believe that signing a paper and agreeing not to do anything wrong will accomplish all that is desired. What about the little thing inside that makes you do wrong?

In the same number of the *Cosmos* it is asked: Does any one believe that pyorrhea can be cured? What foolishness, after all that has been said upon this subject. Why not do all we can intelligently, and be glad that we can accomplish so much for the comfort of our patients and the longer use of their natural teeth. There are two enemies to a proper advance in intelligent practice: one that boasts so foolishly in societies and print, and the other that is so diffident and hesitating.

Those who watch the journals will see the same exhibition in dealing with the subject of pyorrhea in a late meeting in New York. There was some very loose talk. After all, men will be true to their education or lack of it. Knowledge will regulate our feelings as regards practice far more than new names.

The clipping in the April 12 *American Weekly*, regarding the use of cuttlefish bone as a mold for making gold cusps, reads strangely

the Academy of Stomatology he presented an essay upon the treatment of pyorrhea alveolaris, which was appreciated by everyone.

Our societies have had an unusually successful season, which is now drawing to a close. Cordially yours,

THE SPECTATOR.

NEW YORK LETTER.

To the Editor of the Digest, NEW YORK, April 22, 1898.

MR. EDITOR:—We note in the April number of the *American Dental Weekly* Dr. Johnson's criticism on the indiscriminate crowning of teeth. It is timely.

We wish to call attention to another misdirected practice. Is it skillful to destroy a perfectly sound superior bicuspid by putting a jacket over it for the carrying of artificial material? This jacket causes the greater part of the cuspid to yield to the action of fermentation generated within, and the pulp becomes exposed, so that it becomes necessary to remove the remaining portion of the tooth and place a crown on the root.

In the same journal we see that Dr. M. L. Rhein advocates the destruction of all pulps that an artificial gold crown may cover. Is this wise practice? He may not be rightly quoted, and we trust this is the case.

We learn that Dr. Geo. Evans has won his suit against Dr. Rynear versus the Consolidated Dental Co. The claim of Dr. Evans was upon the "seamless" gold crown. The case was appealed to the United States Supreme Court, and it has cost Dr. Evans $6,000.

The war paint is getting more scarlet in these days, and indications are that there will be some lively encounters ere long. We met a long-established dentist of this city recently, and he had a long face because of the prospective war, fearing that there will be no business for dentists. We reminded him that it was not so during our civil war, for money was in free circulation after the first three months, and dentistry never had such an uplift financially as during the war. Simultaneous with it was the associative boom under Dr. Atkinson's fraternal spirit and marvelous energy.

The other day we met Dr. Stowell, of Pittsfield, Mass., president of the Massachusetts Dental Association, and he seems the man for the place. The program for the June meeting in Boston looks as if there would be a chance for some one to advance. Boston is a big

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

DIAGNOSIS.

We would call special attention to the article in this month's issue by Dr. W. Geo. Beers on this subject. The idea is rapidly becoming prevalent that the discerning faculty is not sufficiently trained while dentists are in college. Certainly nothing helps so much towards success in our profession as the power to correctly diagnose dental diseases. To know just where the trouble lies is quite as important as the ability to properly administer the needed remedy. We shall take up this subject more fully in the near future, and we invite other members of the profession to give their views on the question.

ATTEND YOUR STATE MEETING.

At this season of the year, when the various state societies are holding their regular annual meetings, we would urge upon the individual members of the profession the importance of attending. The state societies are probably the greatest broadening factors in the life of the dentist. At these meetings he meets his fellow practitioners, and besides the good which comes from escaping the routine of office work for a few days, he receives many new ideas, gets help on vexing problems, and derives much benefit from his trip. Furthermore, societies need the support of every dentist in the state, and we feel that he owes it as a duty, not only to the society, but to himself and his profession, to attend and do his share toward helping on with the work.

THE PROFESSION'S LOSS.

The farewell dinner, April 27, to Dr. Geo. H. Cushing brought together so many of his warm personal friends that the dining-room of the Leland Hotel, Chicago, was more than filled. It was the occasion of Dr. Cushing's retirement from practice, and he is leaving the city to take up his abode in California, where his family have

like that credited to Dr. Hillier, of New York, in our February letter to the DIGEST.

The First District have reelected their last year's officers for the coming year.

The Odontological Dwinelle Clinic this month proved interesting. "Tin and Gold" came in for additional attention, not, however, with ivory points. How is that? Our genial friend, Dr. Shumway, may tell. We remarked at the clinic that some of the practitioners are getting shaky hands, and others thought that a good many are so afflicted. It belongs usually to old and infirm practitioners, but we believe that tobacco, coffee and other things in excess contribute to the shakiness.

Dr. Van Woert gave a practical exhibition of crown setting, adding body to the form of a plate tooth, giving more of the natural tooth form, and making a speedy operation. He used electricity for baking the body which was added.

We met Dr. Terry, of Milan, Italy, at this clinic. He is resting for a year, and his son, a late graduate of Ann Arbor, is in charge of the home office.

Dr. Kirk gave, as always, a well-written article, entitled "A Resume of the Tooth-Bleaching Process." This was for the edification of the evening meeting, and an earnest attendance awaited him.

Dr. C. S. Hurlbut, of Springfield, Mass., called on us this month with his wife on his way home after a two months' stay in Florida. His brother Jared and wife, who have many friends here, have been away from home during the winter, as he is obliged to get away from the severe weather of New England. They are now at St. Augustine, Fla.

The next move is at Albany, for the state meeting, and more for an eastern branch of the National Association. This is wise. We think we see a strong probability of mistake in the form of organization—that is, if it is thought to add a larger membership from those who have not before affiliated with the associate bodies of dentists. An idea is prevalent that there is a decided tendency to make dental societies exclusive, and this move is in the age.

Cordially, NEW YORK.

PASTEUZIRED BUTTER is the latest antiseptic novelty. It consists of butter made from pasteurized cream and is thought to have a better flavor and to keep better than the ordinary butter.

been obliged to live for some years past on account of ill health. The event was not one which we can call pleasurable, as all were made sad by the thought that our old friend was about to leave us. This feeling was lessened only by realizing that it showed in what universal esteem Dr. Cushing is held, and demonstrated that his work and unceasing effort have been appreciated. Few men in the dental profession have ever accomplished so much for the good of their fellows in promulgating society work, and for this he was, especially fitted, having great organizing ability and honesty of purpose. He has been one of the leaders in all advanced movements of starting and carrying on the work of our societies, both local and national. Furthermore, he was always present, and, as said by one speaker at the banquet, "he was ever present at the first session and stayed until adjournment." He takes with him to the Pacific coast the best wishes and Godspeed of the whole dental profession, not only here in Illinois but throughout the United States; and after such a life of usefulness he deserves to spend his declining years in rest and comfort.

NOT A FINANCIAL SUCCESS.

The above has reference to the dental profession. Our observation and knowledge of individual practitioners is that as a rule they fail to make the business part of their practice a success—that is, they do not accumulate enough money to live comfortably and pay their debts promptly. This is true of many who earn enough to have a bank account, but for some reason or other it slips away, and a sufficient sum is never gotten together so that all bills can be met. In consequence, certain obligations are always pressing, and the result is a discomfort of mind, which in time impairs the health and destroys those qualities most essential to a good practitioner, namely, uninterrupted thought and good judgment. No one who possesses the fine sensibilities that should go with a professional man can do his best and give his most valuable services if at frequent intervals he is annoyed by collectors pressing for obligations which are promised and overdue, and has the awful depression upon him which comes from being in debt. It is a great hindrance to the good standing of the dental profession that they are so poor, and we speak advisedly when we say that it is the exception when a dentist has his bills paid and can show even a small amount of ready money.

As a rule dentists begin contracting debts while students; this indebtedness is increased when equipping for practice, and it would be interesting to know what per cent ever get free from these early shackles. It is no exaggeration to say that a great majority of practitioners live from week to week and year to year without ever accumulating even a moderate fortune, and they consequently do not enjoy that usefulness in life which financial freedom gives.

The reason which is most often given to account for this state of affairs is, that there are too many dentists in proportion to the needs of the community. This is probably true, but the fact that this lack of financial success existed twenty-five years ago, when there were not so many practitioners in proportion, makes it necessary to look for other causes besides that of overcrowding.

As a rule the dental profession are not businesslike in their methods of dealing with patients. When new patients come, unless they are well recommended, a deposit should be required, and this can generally be suggested without giving offense. Bills should be sent out the first of each month, for accounts are much more easily collected soon after the work is done than several months afterward. All accounts and records should be carefully kept, and we fear that in too many cases this is not done.

It is a well-known fact that a dentist's expenses are of necessity out of all proportion to his income. He must have reasonably commodious apartments, and is expected to show a fair degree of prosperity, although this is often carried to a far greater extent than is wise or profitable. All that is essential are those articles necessary to do the work in the best manner and shortest time. Beyond this any extravagance in the way of elaborate office arrangements is superfluous, and often demonstrates a lack of genuine earnestness, as it is indulged in for show and relied upon to take the place of the best professional service.

A very wasteful practice is that of purchasing every new knick-knack that is offered, as in many cases it is no better than what is being used and is often entirely useless. This weakness on the part of the average practitioner is well understood by the experienced canvasser, and he strives to carry something new, as it is sure to catch the dentist's fancy.

A still greater need for reform is in the present methods of procuring the necessary supplies. The profession generally require

that the materials which they use shall be brought to them, and the traveling salesmen are urged to come around early and often. Without going into the details of this question, which later we shall discuss fully, we will say: If the dentist would order what he needs through the mail, and have ready money enough that he can pay for the same, thus getting a cash discount, his supplies could be furnished at a much lower cost, and the amount which he could save in this one regard would, if deposited, soon give him a bank account.

Having gone through the purgatory which the lack of sufficient money to meet current expenses brings, we can emphatically urge this one proposition. Make the expenses come within the income, and arrange your business so that, no matter if attained by small amounts, a deposit of ready money is always on hand. This rule persisted in would advance the standing and increase the usefulness and happiness of the dental profession one hundred per cent.

Notices.

OHIO COLLEGE OF DENTAL SURGERY.

The fifty second annual commencement of the Ohio College of Dental Surgery was held at the Odeon, Cincinnati, Ohio, Tuesday, April 5, 1898.

INDIANA DENTAL COLLEGE.

The eighteenth annual commencement of the Indiana Dental College was held Tuesday evening, April 12, 1898, at the English Opera House, Indianapolis, Ind.

WASHINGTON STATE DENTAL SOCIETY.

The Washington State Dental Society will convene at Tacoma, May 16-18, 1898. The State Dental Examining Board will be in session at the same time.

C. L. ERWIN, Secretary, Seattle.

BLUE GRASS DENTAL SOCIETY.

The annual meeting of the Blue Grass Dental Society will be held at Paris, Ky., May 3, 1898, and adjacent members of the profession are cordially invited to be present.

DENTAL COMMISSIONERS OF CONNECTICUT.

The Dental Commissioners of Connecticut will meet in the supreme court rooms at the Capitol in Hartford, Monday, May 16, 1898, at 10 o'clock a. m., to examine candidates for license and attend to all matters proper to come before them. Persons desiring to practice in this state must apply to the recorder for the proper blanks, which they will fill out and return to him before the day of examination.

GEO. L. PARMELE,
Dental Commissioner and Recorder, Hartford.

DENTAL DEPARTMENT OF MARION-SIMS COLLEGE OF MEDICINE.

The commencement exercises of the dental department of Marion-Sims College of Medicine were held Saturday evening, April 9, 1898, at the Fourteenth Street Theater, St. Louis, Mo.

ILLINOIS STATE DENTAL SOCIETY.

Anyone having a new appliance or instrument, please send same immediately with full description to Dr. J. E. Keefe, East 34 Washington street, Chicago, Chairman Dental Art and Invention Committee, Illinois State Dental Society.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners will be held in the Capitol at Springfield, May 9, 1898. All persons wishing to take the examination should advise the secretary to that effect.

J. H. SMYSER, Sec'y, 70 State street, Chicago.

COLORADO STATE DENTAL ASSOCIATION.

The twelfth annual meeting of the Colorado State Dental Association will be held in Denver, June 7-10, 1898, in conjunction with the Stomatological section of the American Medical Association. Those attending may avail themselves of reduced railroad rates. An excellent program is assured, and a cordial invitation is extended to all members of the profession.

ARTHUR C. WATSON, Chairman Ex.-Com.

CHICAGO DENTAL SOCIETY.

At the annual meeting held Tuesday evening, April 5, 1898, the following were elected officers for the ensuing year: President, J. E Hinkins; First Vice-President, D. C. Bacon; Second Vice-President, E. A. Royce; Recording Secretary, Elgin MaWhinney; Corresponding Secretary, C. S. Bigelow; Treasurer, E. D. Swain; Member Board of Directors, J. G. Reid; Board of Censors, A. W. Harlan, W. V-B. Ames, C. N. Johnson.

C. S. BIGELOW, Cor. Sec'y.

MASSACHUSETTS DENTAL SOCIETY.

The annual meeting of the Massachusetts Dental Society will convene at Mechanics Hall, Boston, June 1 and 2, 1898. This convention is expected to be one of the most successful in the history of the society. Extensive exhibits of material by the various supply houses and complete operations in the mouth and in the model by leading dentists and dental laboratories will be a prominent feature. Information to prospective exhibitors may be had by applying to F. S BELYEA,

Brookline, Mass., Chairman Committee on Hall and Exhibits.

LATEST DENTAL PATENTS.

600,604. Device for swaging gold plate for crown or bridgework, Wm. H. Baird, Burlington, Ia.

600,924. Dental engine, Lewis T. Methot, Boston, Mass.

601,057. Gas administering apparatus, Wm. A. Johnson and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia.

601,178. Dental matrix retainer, Joseph M. Strout, Portland, Me.

601,395. Dental engine handpiece, John W. Gilbert, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

601,386. Cataphoric electrode support, M. W. Hollingsworth, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

601,703. Artificial denture, Edwin L. Chaffin, Helena, Ark.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL DENTAL ASSOCIATION.

We would call attention to that section of the by-laws of the National Dental Association which relates to the appointment and qualifications of delegates, which is as follows:

"Article iii, section 3. All delegate members shall be practitioners of dentistry. They shall be received only from permanently organized state dental societies. They shall be elected by ballot at some regular meeting of their society, and shall be members who have done meritorious work for the profession; but no person shall be received as a delegate who is in arrears for dues to this association."

Also "Article IV., section 1. Each state society may send one for every ten of its active members as delegates to this association for one year, upon complying with the requirements of this constitution; but no society shall be entitled to representation that does not adopt or substantially recognize the code of ethics of this association."

The fact that the American Dental Association received delegates from both local and state societies makes it necessary to call attention to the fact that delegates to the National Dental Association will be accepted only from the state societies, and that such delegates must be elected by ballot at a regular meeting of the society. By request of the president.

EMMA EAMES CHASE,
Corresponding Secretary National Dental Association.

PROGRAM OF ILLINOIS STATE DENTAL SOCIETY.

1. Annual Address by the President, Dr. J. A. W. Davis, Galesburg.

2. Report of the Committee on Dental Science and Literature, by Dr. A. W. Harlan, Chicago.

3. Report of the Committee on Dental Art and Invention, by Dr. J. E. Keefe, Chicago.

4. Report of the Committee on Necrology.

5. Preparation of Cavities, illustrated by lantern slides, by Dr. M. L. Hanaford, Rockford. Discussion opened by Dr. W. E. Harper, Chicago.

6. Cataphoresis (Electrolysis), by W. V-B. Ames, Chicago. Discussion opened by Dr. W. W. Moorehead, Aledo.

7. Oral Surgery, by Dr. T. W. Brophy, Chicago. Discussion opened by Dr. R. N. Lawrence, Lincoln.

8. Why Coagulants Diffuse Through Dentin, with experiments, by Dr. E. Lawley York, Chicago. Discussion opened by Dr. J. E. Hinkins.

9. A New Process of Fusing Platinum, by Dr. L. E. Custer, Dayton, Ohio. Discussion opened by Dr. W. V-B. Ames, Chicago.

10. Where Shall I Locate, or the Beauties of a Country Practice, by Dr. J. W. Cormany, Mount Carroll. Discussion opened by Dr. C. N. Johnson, Chicago.

11. Essential Oils, Results of Recent Experiments, by Dr. A. H. Peck, Chicago. Discussion opened by Dr. G. V. Black, Chicago.

12. The Ceramic Art in Dentistry, with some Original Methods and Experiments, by Dr. J. E. Nyman, Chicago. Discussion opened by Dr. C. B. Rohland, Alton.

13. Amalgam, by Dr. C. P. Pruyn, Chicago. Discussion opened by Drs. T. W. Pritchett, White Hall; J. G. Reed, Rockford; W. A. Johnson, Peoria.

14. Report of the Supervisor of Clinics, by Dr. E. K. Blair, Waverly.

LIST OF CLINICS.

1. Dr. C. P. Pruyn, Chicago. Method of Applying the Rubber-Dam in Cases of Extensive Decay in Approximal Surfaces of Bicuspids and Molars, and Filling with "Fellowship" Alloy.

2. Dr. G. W. Schwartz, Chicago. Porcelain Crown.

3. Dr. W. H. Taggart, Chicago. Carving Porcelain.

4. Dr. J. W. Wassall, Chicago. Bridge Attachment to Teeth with Living Pulps.

5. Dr. J. E. Nyman, Chicago. Making and Mounting Porcelain Crown.

6. Dr. L. E. Custer, Dayton, Ohio. Will Demonstrate New Process of Fusing Platinum, Using Edison 110 Volt Current.

7. Dr. J. W. Cormany, Mt. Carroll, Ill. Amalgam Filling with "Fellowship" Alloy.

8. Dr. Geo. A. McMillan, Alton, Ill. Bleaching a Tooth Discolored from the Absorption of Disintegrated Pulp Tissue.

9. Dr. George D. Sitherwood, Bloomington, Ill. A Practical Case in Orthodontia, Using the Angle Method.

10. Dr. R. N. Lawrence, Lincoln, Ill. Making and Tempering Instruments.

11. Dr. C. B. Sawyer, Jacksonville, Ill. Making Gold Crown and Demonstrating a Method of Soldering Occlusion.

12. Dr. C. S. Case, Chicago. Something in Orthodontia.

13. Dr. H. J. Goslee, Chicago. An Exhibit of the Method of the Carved Cusp System in Crown and Bridge Work.

14. Dr. C. B. Powell, Jacksonville, Ill. Gold Filling in Bicuspid, Demonstrating the Use of Perry Separator and Formation of Contact Point.

15. Dr. H. A. Potts, Bloomington, Ill. Approximal Gold Filling in Central Incisor, Using Rowan's Gold Rolls and Platinized Gold.

16. Dr. A. J. McDonald, Kansas City, Mo. Engine Exhibit.

17. Dr. J. H. Kennerly, St. Louis, Mo. Removal of Pulp—Cataphoresis.

18. Dr. J. N. Crouse, Chicago. Use of Oxychlorid of Zinc Instead of Clamps in the Application of the Rubber-Dam.

19. Dr. G. A. Bowman, St. Louis, Mo. Potpourri—Table Clinic.

20. Dr. M. R. Windhorst, St. Louis, Mo. Gold Filling—Large Disto-occlusal Cavity in Lower Molar, Using Solila Gold.

21. Dr. A. W. McCandless, Chicago. Demonstrating by Models Preparation of Molar Roots for Porcelain Crown.

22. Dr. R. C. Brophy, Chicago. Cast Aluminum.

23. Dr. E. R. Carpenter, Chicago. Application of Cocain in Applying Clamps in Gingival Cavities.

24. Dr C. N Johnson, Chicago. The Preparation of Cavities in Natural Tooth Forms.

25. Dr. T. L. Gilmer, Chicago. Will Give Surgical Clinic if suitable case can be procured.

26. Dr. A. W. Harlan, Chicago. Pyorrhea.

27. Dr. G. A. Thomas, Chicago. Porcelain Crown and Bridge.

28. Dr. Elgin MaWhinney, Chicago. Bleaching.

29. Dr. E. J. Perry, Chicago. Pyorrhea.

30. Dr. T. W. Brophy, Chicago. Will Give Surgical Clinic if suitable case can be procured.

31. Dr. F. H. Stafford, Chicago. New Method of Reproducing Gutta-Percha Carved Cusps in Fusible Metal, the same to be used in Dies for Solid Gold Reproduction.

32. Dr. Josephine D. Pfeifer, Chicago. Frosting Aluminum Plates

33. Dr. R. Good, Chicago. Pyorrhea.

34. Dr. L. W. Skidmore, Moline, Ill. Will Demonstrate a Method of Preserving What Natural Teeth a Patient May Have, When the Last are Extracted, to Serve as a Guide in Setting Up the Artificial Ones.

35. Dr. J. G. Harper, St. Louis, Mo. To be announced.

36. Dr. G. V. Black, Chicago. Results of Amalgam Experiments.

37. Dr. F. B. Noyes, Chicago. Amalgam Demonstration.

News Summary.

DR. EDGAR PALMER is now located in Los Angeles, Cal., after thirty years' practice in Wisconsin.

ALABAMA DENTAL ASSOCIATION.—The transactions of the Alabama Dental Association at its twenty-eighth annual convention, held in Birmingham, April 13-16, 1897, have been received.

FAITH-CURE DOCTORS, according to a Baltimore judge, are not legally entitled to remuneration for their services. He takes the ground that the faith-cure physician renders no apparent service to the sick.

TO PREVENT BROACHES TURNING.—I have long been troubled by having my canal cleansers turn and pull out readily from the handle, but to-day I easily fixed a couple so they do not. One way is to coat the shank with soft

solder, but the better and more convenient method is simply to roughen shank by the easiest means. I accomplished it by simply striking with the edge of a file.—*Dr. R. Matthews, Wichita, Kas.*

LEPERS.—The total number of lepers in the world is estimated at 2,000,000, of whom 5,000 are in Hawaii and the United States, 20,000 in Japan, 20,000 in Europe, 40,000 in Turkey, 130,000 in India, 300,000 in South America, and 500,000 in China.

TEETH AND THE SOIL.—Examinations of recruits in Bavaria and Sweden conducted on a large scale have confirmed the assumption that the richer the soil in lime and magnesia, the harder the drinking water, the more perfect the development of the teeth.—*Munch. Med. Woch.*, No. 3, 1898.

DIVINE HEALER ON TOP.—The Kansas State Board of Health recently applied to the attorney-general for a decision concerning the enforcing of the medical-practice law in that state. The legal luminary cogitated for a while, and then delivered the opinion that the magnetic healers and the hypnotists and all the other quacks except divine healers can be prosecuted, but adds that the divine healers claim their power to come from Jehovah, and that, as he understand it, the rights and privileges of Jehovah can in no way be regulated or restricted by the statutes of Kansas.

"DON'T WORRY" clubs are springing up all over the land. In opposition to them the *Atchison Globe* has the following sensible remarks to make: "Don't join a Don't Worry club. Don't try not to worry. While contentment is a pleasing virtue, the people you know who are contented would be better off if they worried more. Absolute contentment and indifference to the possible troubles of to-morrow will land anyone in the poorhouse. The cow doesn't worry, neither does the clam; but people are built to worry, and it was intended that they should. On the other hand, if you worry much it will land you in the insane asylum. It is the insane asylum on the one hand and the poorhouse on the other; the point is to worry just enough to keep out of both of them."

AMERICAN DENTISTS IN ITALY.—The Italian government has apparently had enough of tourists, for it is doing its best to keep them away by its crusade against non-Italian physicians and dentists. Recently, according to the Rome correspondent of *The Lancet*, a circular has been addressed by the minister of the interior to the prefects throughout the kingdom. It is neither more nor less than a mandate charging these functionaries to invite all non-Italian dentists to furnish proof that in addition to their home qualifications they possess one from a recognized qualifying body in Italy, failing which these gentlemen are to be held as practicing illegally, are therefore to be called upon to desist from practice, and in the event of their being contumacious to be denounced to the judiciary authority.—*Medical Record.*

HOW THE BRAHMIN CLEANS HIS TEETH.—When the Brahmin cleans his teeth he must use a small twig cut from one of a number of certain trees, and before he cuts it he must make his act known to the gods of the woods. He must not indulge in this cleanly habit every day. He must abstain on

the 6th, the 8th, the 9th, the 14th, the 15th and the last day of the moon, on the days of new and full moon, on the Tuesday of every week, on the day of the constellation under which he was born, on the day of the week and on the day of the month which correspond with those of his birth, at an eclipse, at the conjunction of the planets, at the equinoxes and other unlucky epochs, and also on the anniversary of the death of his father or mother. Anyone who cleans his teeth with his bit of stick on any of the above mentioned days will have hell as his portion.—*Hindoo Manners.*

CHILBLAINS.—Those who suffer from this unpleasant affection during the winter months will be interested in the following: Prof. A. E. Wright finds that the blood of persons liable to chilblains takes about three times longer to coagulate than the normal time (three to four minutes). This condition obtains in children whose blood is deficient in calcium (owing to bone formation), in those liable to nose-bleeding and urticaria, in those of lymphatic habit of body, in persons subject to malarial cachexia, and in those of hemophilic constitution. He gives a record of eight cases in which the slow coagulability of the blood was marked, and all were rapidly cured by the administration of from 6 to 30 gr. of calcium chlorid three times a day. The cure took from three to ten days only, a most remarkable thing, for several of the cases were very bad.—*Brit. Jour. Dent. Sc.*

OZONE.—It may not be generally known that a very simple and effectual way of bringing ozone into the house consists in first suspending moist linen sheets in a keen, dry wind, and afterward hanging them up in the house. The air in the room will thus become considerably charged with ozone and its presence will be easily detected by its peculiar smell, while a moistened starch-iodid paper will instantly turn blue. Why ozone is accumulated in wet cloths in this way is not quite understood, but it may be due to the rapid passage of the oxygen in air over a large wet surface. It is not improbable that this interesting phenomenon plays an important part in the real hygienic cleansing of our linen articles of clothing. In big laundries, when the not quite dry linen is brought in after having been exposed to a cold, dry air for a short time, the smell of ozone is almost more than is agreeable.—*The Lancet.*

CAUSES OF POVERTY.—In Europe paupers are defined to be those who receive aid from government or charitable funds. The proportion of paupers to the whole population is highest in England, 28 per 1,000. In Scotland it is 24, in Ireland 23, in Holland 20, in Italy 10, in Austria 9, in France 8 and in Germany 7. There is no similar division made officially in the United States, and taking the country through, the proportion here is less probably than 2 per 1,000. When it comes, however, to the causes of poverty, the American statisticians are, so to speak, right in line with what some persons would call their conjectures, but what they describe as their conclusions. Thus, of 100 cases of poverty, 11 per cent are chargeable to drink in excess, 21.3 per cent to what the statisticians call "misconduct," a rather vague designation for unwise or reprehensible acts; 28.5 per cent to lack of work or inadequate pay for work done, or insufficient, half-time employment, and most of the remainder to "misfortune."—*New York Sun.*

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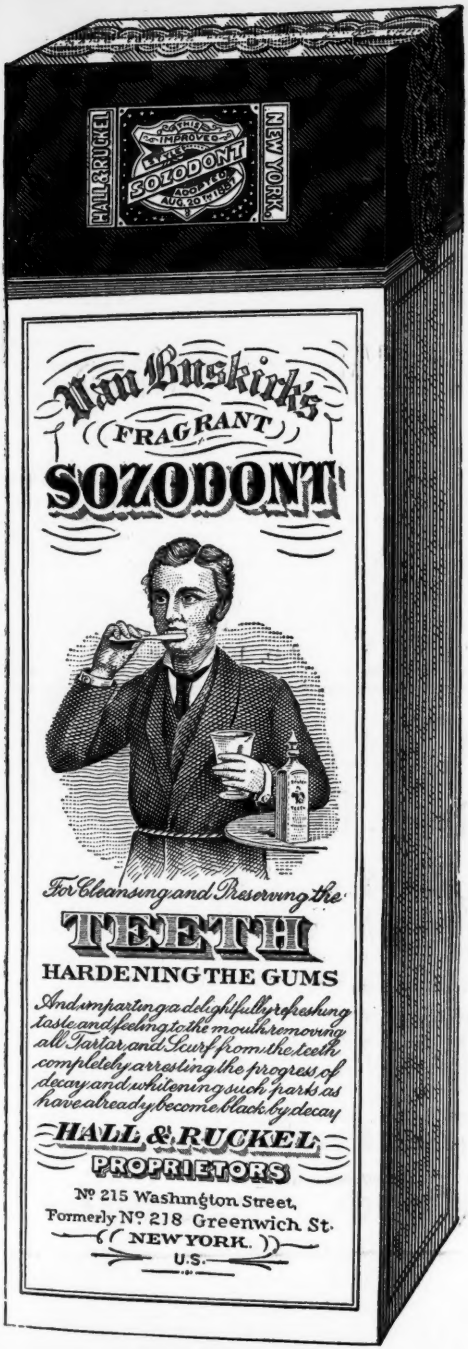
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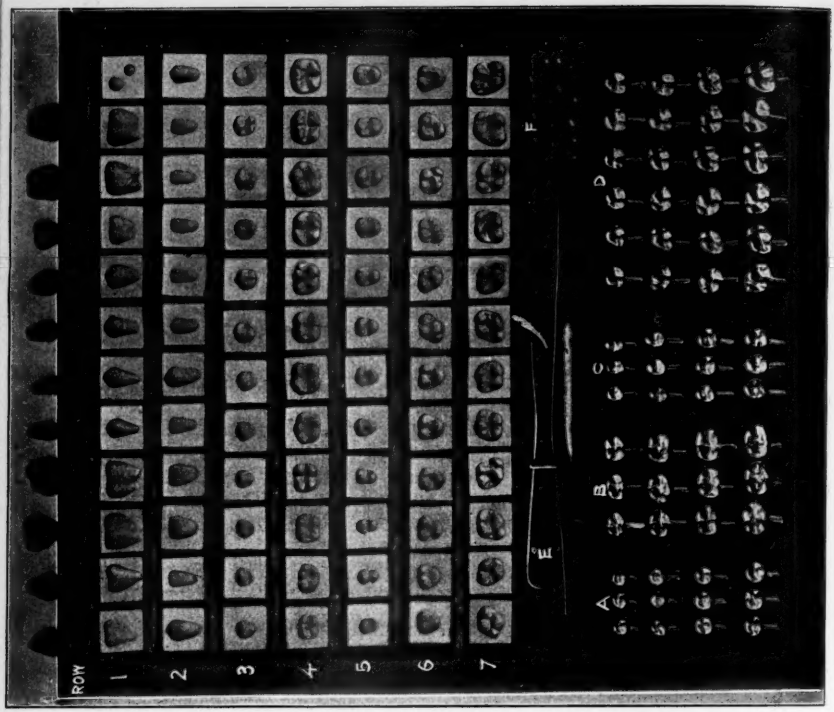

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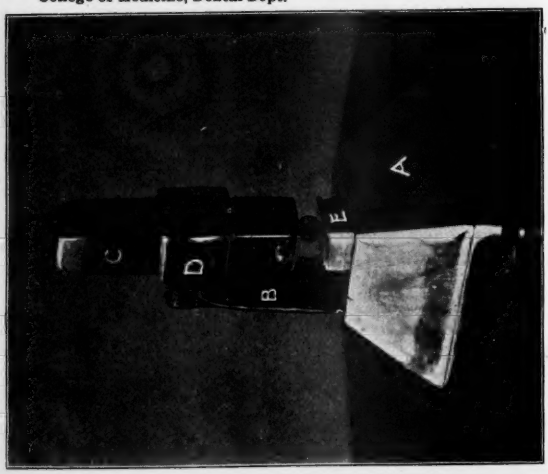

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